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OF
GREAT BRITAIN AND IRELAND.



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J. R. A. I.

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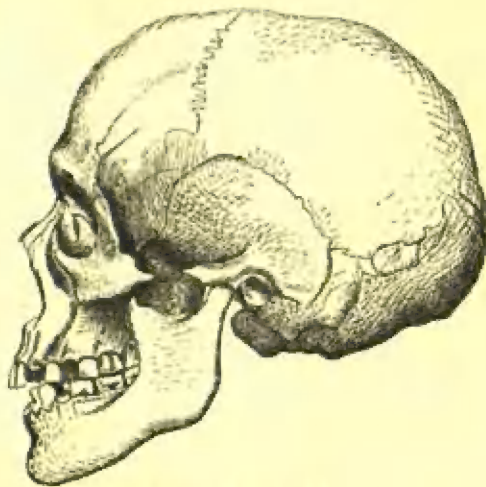


FIG. 1 (No. 346a).



FIG. 4 (No. 346b).

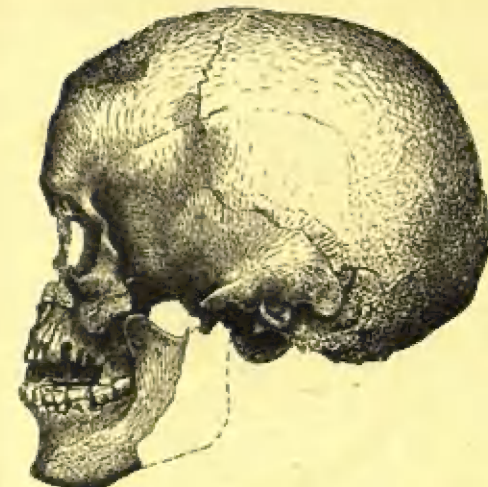


FIG. 5 (No. 164).



FIG. 2 (No. 346a).

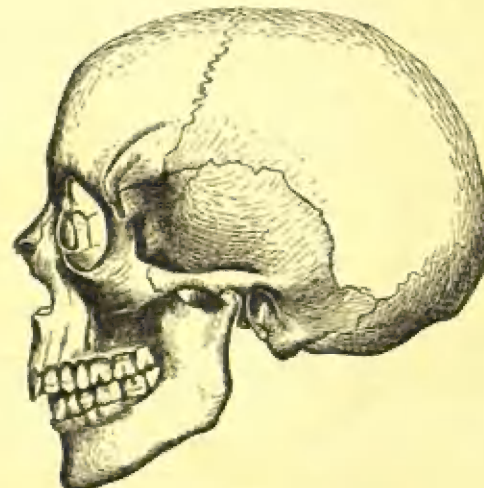


FIG. 3 (No. 346a).



FIG. 6 (No. 164).

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THE JOURNAL
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FEBRUARY 13TH, 1883.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the AUTHOR.—*El Origen del Hombre Sud-Americano.* By Francisco P. Moreno.

— *Some Observations on the Darwinian Theory of the Evolution of Species.* By Hugh F. Hall, F.G.S.

From the BUREAU OF ETHNOLOGY, U.S.A.—*First Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution.*

From the ROYAL ACADEMY OF COPENHAGEN.—*Oversigt over det Kongelige Danske Videnskabernes Selskabs.* 1882, No. 2.

From the PEABODY MUSEUM.—*Fifteenth Annual Report of the Trustees of the Peabody Museum.* Vol. III, No. 2.

From the COLONIAL OFFICE.—*Statistics of the Colony of New Zealand for the year 1881.*

— *Results of a Census of the Colony of New Zealand.* April, 1881.

- From the ASSOCIATION.—Journal of the Royal Historical and Archaeological Association of Ireland. October, 1882.
- Proceedings of the American Association for the Advancement of Science, Cincinnati. August, 1881.
- Proceedings of the Geologists' Association. October, 1882.
- Journal of the East India Association. Vol. XIV, No. 5.
- From the ACADEMY.—Atti della R. Accademia dei Lincei. Vol. VII, Fas. 1, 2.
- From the INSTITUTE.—Proceedings of the Canadian Institute. Vol. I, Fas. 3.
- From the INSTITUTION.—Journal of the Royal United Service Institution. No. 118.
- Journal of the Royal Institution of Cornwall. December, 1882.
- From the SOCIETY.—Proceedings of the Royal Society. No. 222.
- Journal of the Royal Asiatic Society, January, 1883.
- Proceedings of the Royal Geographical Society. February, 1883.
- Proceedings of the Asiatic Society of Bengal. July and August, 1882.
- Journal of the Asiatic Society of Bengal. Nos. 249, 250.
- Proceedings of the American Philosophical Society. Nos. 110, 111.
- Bulletin de la Société de Borda, Dax. No. 4, 1882.
- Journal of the Society of Arts. Nos. 1573-1577.
- Bollettino della Società Africana d'Italia. December, 1882.
- Scientific Proceedings of the Royal Dublin Society. Vol III, Part 5.
- Scientific Transactions of the Royal Dublin Society. Vol I, Parts 15-19; Vol. II, Part 2.
- From the EDITOR.—Revue Scientifique. Tom. XXXI, Nos. 2-6.
- Revue Politique et Littéraire. Tom. XXXI, Nos. 2-6.
- "Nature." Nos. 689-693.
- American Antiquarian. January, 1883.
- Revue d'Anthropologie. No. 1, 1883.
- Buletino di Paletnologia Italiana. No. 12.

The PRESIDENT announced that the Council had purchased two large albums of photographs and drawings, and a few books, at the sale of the library of the late Dr. Barnard Davis, and explained that they were placed on the table for the inspection of members.

Mr. JOHN B. MARTIN exhibited two albums of photographs of the West Indies and British Guiana.

Mr. A. R. COLQUHOUN read a paper "On the Aboriginal and other tribes of Yunnan and the Shan Country," illustrating his remarks by means of photographs taken by himself, and projected on the screen by the lime-light.

On the ABORIGINAL and other TRIBES of YÜNNAN and the SHAN COUNTRY. By A. R. COLQUHOUN, Esq.

(Abstract).

The speaker described at length the remarkable journey which he had recently accomplished across China from Canton to Rangoon. The details of this exploration have been published in the "Proceedings of the Royal Geographical Society" for December, 1882. Mr. Colquhoun dwelt especially upon the ethnology of the country he traversed, but the information which he laid before the Institute has since been published in his work, "Across Chrysee," or will appear in a work which he is now writing on the Shan Country. Between Canton and Nan-ning (one of the important towns on the Si-Kiang in Kwang-si), the inhabitants met with were pure Chinese. West of that, to the Yünnan frontier, a mixed population on the river and aboriginal races in the interior were found. Throughout Yünnan the chief population consisted of Shans disguised under a great variety of tribal names. Lo-lo and Miao-tzü aborigines were seen, as well as Thibetans under the name of Kutsung. On the west side of Yünnan Mohammedans were numerous, presumably the remains of the armies of Genghis Khan. The costumes were most varied and picturesque, and the Shans and all the aboriginal people were kind, frank, and hospitable, and in these respects, and in their feet being uncrushed, they offered a great contrast to the Chinese. In addition to the tribes met with, Mr. Colquhoun pointed out that there were in the north and north-west of Yünnan, as well as in Ssu-chuan, four divisions, namely, Li-ssü, Moso, Si-fan, and Mantzü. A remarkable similarity of language existed between the Lo-lo, Li-ssü, Si-fan, and Burmese.

DISCUSSION.

Mr. KEANE hoped Mr. Colquhoun would be able to supplement his interesting account of the Yünnan tribes by some more definite description of their physical types. Amongst them were the widely diffused Lolo people, who seem to extend in isolated groups from Szechuen, Kwei-chew, and Yünnan, down to the Tongking highlands,¹ and who by some travellers had been described as physically more like Europeans than Indo-Chinese. If so they would form a remarkable ethnical parting-line between the Mongoloid Chinese to the east, and the Mongoloid Tibetans, Burmese, and Siamese, to the west. But this point could not be determined without more accurate information on the outward characteristics of the Lolo race than was at present available. It would be

¹ "Il y a des Lolos dans toute la Chine Occidentale" (Abbé Desgodins, in "Bull. de la Soc. de Géog.," vol. xii, p. 410, 1876).

important to know whether the hair was brown and wavy or crisp, the complexion florid, the eyes straight and gray or blue, the nose leptorhine, and the features generally regular, in the European sense, as had often been stated, and any information on these points, from an original observer who had associated with these tribes, would be most acceptable. Mr. E. C. Baber had also recently visited them, and he makes the curious remark that they seemed half possessed with the idea that he was akin to their race. He described them as perhaps taller even than Europeans, well-built, muscular, deep-chested, with arched nose, and altogether evidently far more like the Caucasian than the Mongolic stock.¹

Mr. CARMICHAEL wished to ask whether the divisions of certain so-called aboriginal races mentioned by Mr. Colquhoun, viz., white, black, red, &c., had reference to racial differences of colour, or had some other origin. He was the more desirous of putting this question because he was interested in tracing the existence of a red race in Asia, such as Professor Gennarelli argued had existed in Europe, of which argument Mr. Carmichael had given an account at the Bradford meeting of the British Association. Moreover, Mr. Carmichael believed that in Mr. Baber's narrative of his journey through South-Western China, there were some notices of the existence of such a race, and he should be glad to know if Mr. Colquhoun had met with similar traces. Mr. Carmichael also wished to ask whether Mr. Colquhoun could assign any theological or symbolical reason for the prevalence throughout the district of China, described in his paper, of an unequal number of tiers in the building of the pagodas.

Dr. OPPELT, while thanking Mr. Colquhoun for the information contained in his paper, thought that we should want some further details about the Mian-tse, the Lolos, and the other races mentioned by the lecturer. With respect to the distinction of colour in the names of the different tribes, he believed it referred to the political status of the various races, which condition is described by the prefixing of names of colour; black denoting dependency, as *Kara Khitai* (black Khitas) and others; white and yellow denoting supremacy, as the *White Tzar*, the *Golden Horde*, &c. The Mandarins in China have also different knots in their hats, according to their rank.

The PRESIDENT also took part in the discussion.

The AUTHOR, in reply, said that the colours white and black, &c., applied to some of the races mentioned, did, he believed, indicate dominance or subjection of race. With regard to the fact noted, that the pagodas were either 9, 11, or 13 stories high, he did not offer any mythologic or other theory in explanation. He thought it the part of the traveller to observe closely, and to leave the explanation to the *savants* at home.

¹ "Travels in West China," 1882.

FEBRUARY 27TH, 1883.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

- From C. H. E. CARMICHAEL, Esq., M.A.—*Giornale degli Eruditi e Curiosi.* October, 1882.
- From Professor AGASSIZ.—Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College, for 1881-2.
- From Dr. EMILE HOLUB.—*Aus der Rotunde.* By G. Waldhaus.
- From Dr. W. J. HOFFMAN.—*San Francisco Western Lancet.* October, 1882.
- From SEC. DE ESTADO Y DEL DESPACHO DE FOMENTO.—*Movimiento de Poblacion habido en los pueblos de la Republica de Guatemala durante el año de 1881.*
- From the GEOGRAPHICAL SOCIETY OF LISBON.—*La Question du Zaire Droits du Portugal.*
- From the AUTHOR.—*Indian Pictured Rocks of Guiana.* By A. Winter.
- *I Cranii de' Marsi.* By Giustiniano Nicolucci.
- *Nouvelles Archives du Muséum d'Histoire Naturelle, Paris.* By M. E.-T. Hamy.
- *Oesterreichische Afrika-Expedition.* By Dr. Emil Holub.
- *Sepulchral and other Prehistoric Relics, Cos. Wexford and Wicklow. Megalithic Structures, Cos. Wicklow and Carlow.* By G. H. Kinahan.
- *Some Hindú Folksongs, from the Panjáb.* By Lieut. R. C. Temple.
- From the ACADEMY.—*Nova Acta Academiæ Cæsareæ Leopoldino-Carolinæ Germanicæ Naturæ Curiosorum.* Band 42, 43.
- *Atti della R. Accademia dei Lincei. Transunti.* Vol. VII, Fas. 3. *Memorie della Classe di Scienze Fisiche, Matematiche e Naturali.* Vols. IX, X.
- From the SOCIETY.—*Journal of the Society of Arts.* Nos. 1578, 1579.
- *Bulletins de la Société d'Anthropologie de Paris.* 1882, Fas. 4.
- *Boletim da Sociedade de Geographia de Lisboa.* No. 6.
- *Proceedings of the Society of Antiquaries.* Vol. VIII, No. 6.

From the SOCIETY.—Proceedings of the Asiatic Society of Bengal. November, 1882.

— Proceedings of the Philosophical Society of Glasgow. Vol. XIII, No 2.

— Schriften der Physikalisch-ökonomischen Gesellschaft zu Königsberg. 1880, Abth. 2; 1881, Abth. 1, 2.

From the EDITOR.—Correspondenz-Blatt. Nos. 1, 2, 1883.

— "Nature," Nos. 694, 695.

— Revue Scientifique. Tom. XXXI, Nos. 19, 20.

— Revue Politique et Littéraire. Tom. XXXI, Nos. 7, 8.

— Scientific Roll. No. 10.

The election of CHARLES FOUNTAINE WALKER, Esq., was announced.

Dr. GARSON exhibited and explained some photographs of cases of Hypertrichosis, upon which the President made a few remarks.

Notes on PHOTOGRAPHS ILLUSTRATING CASES of HYPERTRICHOSIS.

By Dr. J. G. GARSON.

The photographs which I exhibit were sent some years ago from Mandalay to the late Mr. Maunder (by the courtesy of whose widow I have the pleasure of showing them to-night), and represent the well-known hairy family, consisting of a grandfather, his daughter, and her son. The first was born in 1799, and was presented when a boy to the King of Ava; at the age of twenty-two he married a woman whose skin was normal, and had four children, three of whom (males) were normal; the youngest (a daughter), however, was hairy like her father. She, in due course, married a man whose hair was normal, and had two sons, both of whom were hairy. The history of the family has been recorded and commented on in two very able papers by Dr. Bartels, in the "Zeitschrift für Ethnologie," 1879. The presence at the Westminster Aquarium of a child from Burma, called "Krao," whose body is covered more or less completely with hair, having brought the subject before us, I thought it might not be out of place to recall to mind this interesting family. The photographs which I exhibit show only an increased quantity of hair over the face, but another in Bartels' paper, which I hand round, shows that on the hands and legs hair was also developed, as it was over the whole body. To this development of hair on abnormal parts of the body the name *Hypertrichosis* has been given, and it has been divided into two kinds: *Hypertrichosis universalis*, when it occurs over the whole body, and *Hypertrichosis partialis*, when only over limited portions, or in patches; the simplest form of this kind is a single hair developed in the centre of a wart, or a few hairs on a mole. The abnormality may consist, not in the locality of development of the hair, but in the time of development; thus the development of a beard and whiskers on young lads, which sometimes occurs, must

be considered abnormal. Or it may consist, not in the position of the hair-growth, but in the sex of the person; thus the development of whiskers on the adult female face is abnormal, though normal in an adult male. The abnormality of hair-development may, therefore, be of three kinds:—*Heterotopic*, as in the photographs now shown, and in the child "Krao"; *Heterochronic*, as in the case of boys developing a beard; or *Heterogenic*, as in bearded women. As to the cause of abnormal hair-growth, the Atavistic theory seems to me to be the most probable explanation, as here we would not have to trace the Atavus far back, and in the normal body we have the Atavistic germ present, though in a rudimentary condition. It would, therefore, be what Gegenbaur terms a palæogenetic form of Atavism.

Mr. ALFRED TYLOR read a paper on "The Homological Nature of the Human Skeleton," illustrating his remarks by means of photographs projected on the screen by the lime-light.

A discussion ensued, in which the PRESIDENT, Miss MARSHALL, Professor THANE, Dr. GARSON, Dr. BRUCE CLARKE, Mr. PARK HARRISON, and Mr. S. B. J. SKERTCHLEY took part, and the author replied.

MARCH 13TH, 1883.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From Mrs. GUEST.—*Origines Celticæ.* By Edwin Guest, LL.D., D.C.L., F.R.S.

From the ACADEMY.—*Proceedings of the Davenport Academy of Natural Sciences.* Vol. III, Part 2.

—*Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften.* Philos.-Histor. Classe. 1882, 100 Band, Hefte 1, 2; 101 Band, Heft 1. Math.-Naturw. Classe. I, Abthlg., 1882, Nos. 1-3, 4, 5; II, Abthlg., 1882, Nos. 3-6; III, Abthlg., 1882, Nos. 1-3, 5-7. Register X. Almanack, 1882.

From the SOCIETY.—*Proceedings of the Royal Geographical Society,* March, 1883.

—*Journal of the Society of Arts.* Nos. 1580, 1581.

From the EDITOR.— *Bulletino di Paletnologia Italiana*. Index and Anno 8°.

— "Nature." Nos. 696, 697.

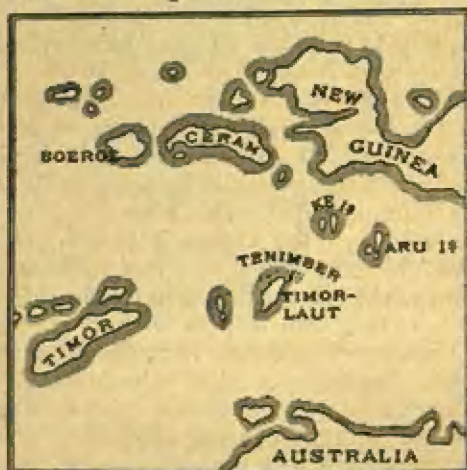
— *Revue Scientifique*. Tom. XXXI, Nos. 9, 10.

— *Revue Politique et Littéraire*. Tom. XXXI, Nos. 9, 10.

The DIRECTOR read the following paper, which had been communicated to the Institute by Mr. John Evans:—

On the ETHNOLOGY of TIMOR-LAUT. By H. O. FORBES, Esq.¹

AFTER an interesting voyage, in which we called at *Gesser*, at the east end of Ceram; at two ports of New Guinea, and then at both the *Ke* and the *Aru* Islands, we landed, on July 13th, 1882, at the village of Ritabel, in the islet of Larat, which lies about fifteen minutes' sail off the north-east coast of *Yamdena*, as the northern of the two portions of *Timor-laut* is named.



SKETCH-MAP SHOWING POSITION OF TIMOR-LAUT IN RELATION TO THE NEIGHBOURING ISLANDS.

Our first concern was to get a house, for all the native huts are so very small that housing our baggage or working in them was quite out of the question. A site was obtained only after the most vexatious delays. In one place it could not be had, because superstitious fear was in the way, and in another because their neighbours of the next villages would be angry

¹ This paper formed part of a Report which was sent by Mr. Forbes to the Committee appointed by the British Association for the purpose of investigating the Natural History of Timor-laut, and was transmitted by this Committee to the Institute through Mr. John Evans, F.R.S., V.P.

if I built a *new* house, without their consent and advice. The difficulty was at last got over, after several days' *bitjara*, by my purchasing two houses at some distance and erecting them within the village boundary—this was not building a *new* house! Even after this the greatest difficulty was experienced in obtaining assistance and in fetching additional bamboos, as they grew near the dreaded Keleobar people.

Our first acquaintance with the inhabitants was on board the vessel before we landed. At first a boat came out to reconnoitre, and on its return to land, evidently with a favourable report, several boats came alongside and landed on us their crews of men only; on a former occasion of a steamer lying along the shore more to the south-east both men and women fearlessly scrambled on board. They were handsome-featured fellows, tall, erect, and with splendidly formed bodies, with their long hair carefully combed out, girt with black, red, and white patch-work bands round the forehead and occiput, the hair being transfixed with a long skewer-like comb, and then hanging down to the shoulders. It is dyed a rich golden colour, varying, however, according to the time between the application of the dye, from a dirty grey through a red or russet colour to the approved shade. Very few show true frizzled hair, and it is quite different from the hair seen on the Papuans of McClure Inlet, New Guinea, or among the Aru Islanders. Perhaps the dyeing of the hair may affect the growth of it: samples for microscopical examination will be, however, sent along with the collections. No clothing is worn, save the narrow T-shaped loin cloth, decorated at the end hanging down in front with red, black and white patch work, and adorned with sections of cowrie shells and with beads. The women wear a short sarong of native manufacture, with artistic patterns from the aloan palm (*Borassus flabelliformis*), bound by a broad belt made from the light stem of the same palm, with an elegant buckle which is often very richly carved, and is frequently the gift of the husband at the time he purchases his wife, and represents a sort of sign of engagement. The men wear numerous armlets made from the shells of a species of *conus*; the women also wear these, but frequently they have heavy anklets of brass and rings on their toes. Both sexes wear also armlets of brass or ivory or wood, carved like those worn by the Hill Dyaks of Borneo.¹ In their ears the women wear a graduated series of earrings in the lobe

¹ A collection of ethnological objects was sent home by Mr. Forbes, and a selection of them has been presented to the Christy Collection, through the liberality of the Royal Society. Mr. Read, on behalf of Mr. Franks, kindly exhibited a selection of specimens on the occasion of the reading of the paper, and has furnished a list which will be found on p. 23.

and round the helix, mostly of silver or gold. The men wear in the lobe very heavy *lor-lora* of gold, which stretch it often so as to break out the hold. Besides these they wear those of bone and ivory and ebony and of the tooth of the *dugong* (*Halicore*). Both sexes tattoo a few simple devices, circles, stars, and pointed crosses on the breast, on the brow, on the cheek, and on the wrists; and scar themselves on the arms and shoulders with red-hot stones in imitation of immense small-pox marks, in order to ward off that disease. I have, however, seen no one variola-marked, nor can I learn of any epidemic of this disease among them. Few diseases exist on the islands. With the exception of that curious skin disease so common among these races, whose cause has been referred to a species of fungus, of the shrinking of the tendons of the arms or hands from rheumatic affections, and a little scrofula, the people seem healthy.

They cultivate, in gardens made in the forest—just like those in Sumatra and in the uplands of Java—*cena* (*Batatas edulis*), *Dioscorea* sp., and *Tocal* (*Janipha Manihot*) *Tevoe* (sugarcane) and *Selaroe* (Indian corn), their staple food, and a little rice, but this grows very badly here: also two or three species of legumes. They grow cotton and make their own thread, as well as cultivate tobacco, whose leaves they chew entire.

The chief meal of the day lasts from about 8 A.M. till nearly noon, and consists of boiled Indian corn-meal pounded in the tridacna shell, mixed with mashed manioc and dry peas, along with a little putrid fish, and a very great deal of *sagueir* from the coco palm. Very few of the older men leave the meal sober. The women seem to eat in private, but the men repair to houses open at the gables, or to roofed sheds at a short distance from the village; the place, too, where they generally distil their arrack. This house serves for a common assembly room.

Their life from day to day seems very monotonous. In the morning, after arranging their hair, they remove from the trees the bamboo containing the *sagueir* or, *toeak*, collected during the night, and trim the stump for running during the day to supply their evening libations. While ascending the trees they invariably chant a song, or invocation, all using the same form of words as far as we could judge. At this task the lithe and elegant figure of the Larat man shows to the greatest advantage, the brown skin and yellow hair showing well against the grey stem of the palm as he ascends. Some of the men accompany the women, by prahu, to the gardens to fetch the necessary stores, while the older men and boys spear fish by the margin of the sea. In the clear calm nights the boats go to the bay in quest of fish by torchlight, and while not too far from the shore, the lit-up figures of the men and of the boats, and the reflec-

tion in the water, form a beautiful picture. They kill the fishes with barbed arrows, or with various forms of harpoon, and occasionally use hooks brought by the Macassar men; and sometimes they intoxicate the fish with rice steeped in poisonous climbing plants. The older men are incapable the greater part of the day, and in this condition are boisterously talkative and pugnacious. A quarrel arising often ends in bloodshed. The day is closed with the evening *toeak* collecting and drinking. The women employ themselves with their looms and in the preparation of the food, and in fact do most of the hard work. In time of war, as now, the village safety is watched all night by the villagers, eight or ten at a time in rotation, who dance the *Tjikalech* round a figure, the representative of their deity, or *Docadilah*, each man beating with his hand a cylindrical drum, singing to its music a song, or invocation, with a wild and sonorous chorus. At the time of full moon they will often play for several days and nights without intermission.

Their arms are a shield, often elaborately carved and adorned with the hair of their enemies, bows and arrows, and various forms of iron-pointed lances and spears, which they use with the greatest precision, and a buckler of buffalo hide in which is stuck a long *klewang*, or sword.

Marriage is here, as was to be expected, the purchase of a woman from her parents—girls are all *ventoeng*, or profit. When a man fancies a woman he repairs to the house of her parents, taking with him a gift of *lor-lora* (earrings), and tells the father that he would like to have his daughter. The father then calls an assembly of all the people. Nothing can be done of such import as the disposal of a daughter without the advice, assistance, and witness of all the villagers; women and youths being admitted as freely to speak as the elder males. They reply to the wooer that if he wishes the woman indicated, he must search for gold earrings and elephants' teeth. No wife can be purchased without elephants' tusks, and consequently they fetch an immense price. They are brought chiefly by the Buginese traders, who in the last monsoon frequent the ports of Sumatra, where I have seen them give 200 to 300 florins for a tusk. In the west monsoon these tusks are brought to these "far far east" shores and exchanged for trepang and tortoise-shell.

The price of a wife is as much as three elephants' tusks, four *klewangs* (or swords), one small and two large gold and three large silver earrings, one bredak, one gold boental, one large gold boelang, and 30 fathoms of cloth. When the man has paid part of the price he may receive the woman, but she remains as a hostage in her relatives' house till such time as the

full price is paid. Sometimes the girl will run away with some man she has taken a liking to, with only the permission of her parents: in this case, on their return, the husband must pay 18 fathoms of cloth, one plate, five large and one small silver and two gold *lor-lora* (earrings), with one elephant's tusk. If, however, the woman has been, or is about to be, disposed of to another man, and she elopes with some other whom she prefers, she is forcibly taken possession of, and the man is punished with death.

When a woman is about to be delivered of a child she is bathed in and drinks a little of a hot decoction of mango and other leaves. When the child is born there is given to it to drink a small quantity of a warm decoction of *tabakaleat* (*Morinda citrifolia*), and it is bathed in the same decoction, to which is added a little baked kamiré (*Aleurites triloba*); it is then put to sleep in the *Sivella*, or cradle. This is a flattish basket, made of woven rattan ropes, suspended so as to rock over a fire placed beneath, with only the spathe of a palm under its back, the head generally lying on rough rattan, and with a small piece of rag thrown over its stomach. The fire below the cradle, which not unfrequently sets fire to it, is partly to keep off mosquitoes, and partly to keep the child warm during night. The smoke is often so great as almost to suffocate the infant.

The series of crania which I am happy in being able to send shows well the effect of this treatment. The side of the hinder-part of the head on which the infant is placed is quite flattened. It would appear that the child is generally placed in the same position in the cradle, probably depending on the place of suspension of the cradle in the house, whether it lay on the right or on the left side. In some living infants the deformity is extremely marked. No sort of binding is applied to the heads at any stage of their youth, and I feel no doubt, from the manner in which I have seen new-born infants placed in the *Sivella*, that the rocking of the infant in the rough cradle is the cause of the deformity. In some crania the deformity is not very prominent; but this may depend, perhaps, on cloth or some soft substance being used to place the child's head on, instead of the palm spathe in general use.

The medicine woman who assists at the birth receives as her professional fee a plate, in which is placed a tortoiseshell bracelet, ten sirie leaves, and twenty pinang nuts, one sarong, and one (?) Tjidakie. The person who bathes the child receives one square bottle of *Sopi* (arrack distilled from the sagnier of the coco palm). The happy father announces the birth by firing off three shots from his own or his neighbour's G.R. Tower gun, and gives twenty plates of rice to the people in attendance.

When the mother puts her feet to the ground again, the husband fires off two more. When the child's hair is cut for the first time, the person who cuts it receives a fee of one gold earring, beads, and one plate of rice. A man may marry as many women as he can purchase, but few have more wives than one.

When a man dies, his children and brothers and elders of the village assemble to mourn—which has, however, neither outward sign nor sound. They bring with them, as far as I was able to ascertain, white or red cloth to wrap the body in, sarongs and other clothes, some coco palm arrack, and a little gunpowder. A pig is killed, but I am in doubt whether it is given to the assembled people to eat or laid with the dead body, which is then placed in a portion of a prahu cut to the length of the person, and with the cut-off end closed up; or if it is a richer person, or the *Orang Kaya*, a decorated prahu-shaped coffin is specially made. This is then (though not with the poor) enveloped with *chita*, or calico, and placed either on the top of some rock by the margin of the sea at a short distance from the village, or on a high platform erected on the shore about low-tide mark. Among the poor the coffin is often made simply of *gaba-gaba*, or stems of the sago palm, pinned together. Sometimes the platform is erected on the shore above high-water mark, and near it is stuck in the ground a tall bamboo, full of saguier, and suspended over a cord are many batatas for the use of the dead man's *Nitu*. Two days after the burial, the family go to bathe and wash their hair; and after two days more they search for ten fishes and one tortoise wherewith to give a feast, which is finished with sirie and arrack *ad lib*. All who die in war or by a violent death are buried, and not placed on rocks or on a platform, where only such as die naturally are deposited. If a man lose his head in war a coco nut is placed in the grave to represent the missing member, and to deceive the spirits. When the body is quite decomposed, his son, or one of the family, takes the head and deposits it on a little platform in his house, in the gable opposite the fire-place, while he places the atlas and axis in his *lovoc*, or sirie-holder (which every man, without exception, carries about with him), to ward off ill luck. The dead man goes to Noesa Nitu, or Maramatta (near Ceram). On this island no one dare land, and it is with fear and great vigilance that they sail past it.

I am told by a man from a neighbouring village that their custom is to place the dead body in the open palm-stem coffin, in which the body soon decomposes, and that thereafter the bones are collected and placed in a wooden prahu-shaped coffin and placed by the edge of the sea. This cannot be the custom in all cases, for I have seen very many of the coffins of wood

and of *gaba-gaba* fallen to pieces, and the bones strewn on and around the rock on which it had been deposited; while all along the shore I have picked up femora, occipital and frontal bones, quite uncared for, and with the human bones I have seen jaws of pigs.

After death the goods of the deceased, if not heirlooms, are divided among his children: those living in a large house getting more than those in a small one. On the death of a parent the children remain with the survivor.

When a man is sick, the medicine man speaks first to his (the sick man's) *nitu* (swangie?), or evil spirit, or part of self living in the earth, having power over the body of the man, if not appeased for ill; laying out for it a little rice and arrack and fish; thereafter he gives medicine to the sick man. There is no special medicine man, but several among the people pretend to knowledge in the science, and are recognised by the others as gifted. One man, while we were very sick with fever, came to the house extremely anxious to be allowed to give us medicine. He produced a few leaves which were not to be eaten, but to be kept about the person or preserved, and gave me a small smooth pebble, which if rubbed first on the tongue, then brought slowly down the mid-line of the body from the lower lip to the umbilicus, where it had to be allowed to rest a few minutes, would cause all sickness to leave the body. Before giving me these articles he placed them before him, repeating some formula. Before making any long journey, or making war, or doing any important work, he goes to propitiate his *nitu* (swangie?), and make it some offering. In what locality in the forest, or by the seashore, or where else the *nitu* resides, or is supposed to reside, I have not been able to obtain information.

When it is required of a man that he make an oath, the villagers assemble; and when a fowl or pig has been killed it is offered to *Doadilah* (or the *Toshan Allah*). It is then cooked, when the person or persons of whom evidence or information is required relate what they have to tell; thereupon all partake of the fowl or pig. Whoever has spoken falsely will be seized with sickness or will die soon. Nearly the same custom prevails among the pagans of the Passoemah Lands in Sumatra, where I spent some time last year; the parties on both sides of a dispute, who are to swear, repair each with his *Repala Kamping*, or chief, to the grave of the Nene Poeyang of his own Monga: that is, to the grave of the first father of the village, and there, after each has given his version of the matter, they partake of food cooked over the grave. Sickness or misfortune will befall the person or the village of the one who has sworn falsely.

Before drinking they extract a few drops from the vessel, and flip it upwards, repeating a formula—in this offering a little to the deity.

Some Virđute men were one day on a visit to the village of Ritabel, and one of them having deposited his loin cloth on a beam, had it stolen and could not find the thief. Several days afterwards he sailed across from the opposite side of the bay where he was staying, bringing with him a small flag on the end of a slender pole. This he erected on the spot where he had lost his loin cloth, and looking upwards repeated a long imprecation against the thief and the village, then withdrew the pole and returned without accosting any one.

All the villagers have almost the same local standing: no man recognises a superior; even the *Orang Kaya*, or head of the village, holds only a nominal position, and he is elected by the general vote of the village. Having fixed on the person whom they desire to be *Orang Kaya*, they announce to that individual the fact of his election. If he accepts (he may decline if he choose) he receives from the village an elephant's tooth and a gold earring, which seem to be his whole fee and sole perquisite.

Slavery is greatly practised among them. If a man steal from his neighbour, or has a debt owing to him and cannot restore the things stolen or pay his debt on the disposal of all his goods, he becomes the slave of him from whom he has stolen, or to whom he is in debt; but his friends can redeem him for a heavy ransom. If a man accuse another falsely of being a thief, or speak ill of him without a cause, so as to make him ashamed before the village, he may become the slave of that other, but is redeemable by a high ransom. It is a custom of the Tenimber tribes to seize from boats at sea, or where they can, men and women as slaves. It is not long since the Larat people had a Chinaman in bondage for many years, having kept him concealed in the interior. The Buginese also carry on a considerable traffic in slaves, bringing them from Hoemaheua and from the east coast of Celebes.

The pomali signs of the Tenimber people, besides the branch of a palm inserted in a bamboo stuck in the ground in front of the place tabooed, I have been unable to discover.

The men vary very greatly in stature: some are short and thick-set, and reach little over 5 feet, if they even attain that height; the greater proportion are tall, well-formed men of about 5 feet 11 inches, but some stand well over 6 feet, splendid-looking fellows with perfect frames and magnificent muscles. The women vary in like degree, some being short and thick, scarcely reaching 5 feet, while others are as tall as the taller of

the men. In their walk they stride forward in a jerky, bouncing style, which gives to the head a sharp nodding motion, their hair, when combed out behind, heaving up and down. Their whole motion is full of grace, but so proportioned are they that it really seems scarcely possible for them to move ungracefully. As children many of them are really pretty in face and figure; numbers are frequently disfigured by enormously distended stomachs and abdomen, which induces a sad expression of countenance and a sickly face. The youths are splendid examples of the human form; many of the girls are handsome, and a few are even beauties, with pensive eyes, delicate features, and faultless in contour of body and limbs. As they pass into the married state the features become coarser, but on the whole neither sex can be called ugly.

Hair is abundant on the head, in the armpits, on the pubic region, and often on the abdomen as far as the umbilicus; the legs are more hairy than the arms. On the face, many of them assiduously pull it out, as the Malays do, keeping in their *lovee* a small bamboo pincers for the purpose, by the aid of the mirror which nearly all possess in the top of their tobacco box. A few have rather thin whiskers and beard. Their coiffure seems to depend on the kind of hair nature has given them, whether straight or frizzled. When frizzled it is arranged in a mop, and when straight is combed back, to hang down in a "cataract" behind. One of their most pleasing morning occupations is to comb out their yellow auburn or golden hair, which they have washed and dyed the night before with the ashes of the coir of the young coconut, using the water collected in a prahu, or their shadow cast on the ground, as a mirror.

The young coconut is preserved with great care, for one sees in the neighbourhood of the village small huts, shading circular coral-rimmed depressions, in which these are stored.

In their hair-combing they take the most evident pride, and the vanity with which they bind various coloured cloths round the head from brow to occiput is amusing. Their favourite colours are red, blue, and white; and their head-cloths are often made by themselves of patchwork of these colours in longitudinal and vertical rows. These patchwork bands are often affixed to a bamboo girdle, and worn as described. Among the women hair is abundant on the head, without being very profuse. In the armpits it is also very abundant. They do not dye their hair. Many have quite straight and black hair, not to be distinguished by the eyesight from that of the Malay. Others have more of the Papuan frizzle. They take little or no care of the hair; they comb it but seldom, simply twisting it into a knot behind, where it is often transfixed with a neatly ornamented comb. The men

frequently cut their hair; but those who wear a mop have not the unravellable mop of the Papuan seen in some regions. One day, some of them coming into our house and seeing a pair of scissors, begged its use to cut their hair. It was granted, and one at once started as haircutter, and as soon as it was known that such operations were going on a crowd came one after another begging for this luxury. We tried to get some specimens of their hair, but when they saw that we desired to keep it they became quite afraid, begging it back, for they said they would die. They gathered up every scrap, and had not a kind wind assisted us, and blown some scraps to a little distance out of their sight, which my wife and I marked down, noting the subject from which it had come, we could not have obtained any specimens. In Sumatra I once noted a man most carefully bury the scraps after paring his finger-nails. Perhaps there exists there also a superstitious dread of any part of the person being in possession of another. One day, when I purchased a skull of the father from his son, something of the same dread appeared. For as soon as the bargain was completed, the seller took from his *lovee* (or sirie-holder) a piece of areca-nut, and setting the skull before him placed the nut between the teeth, and after repeating some sort of invocation handed it over to me. Also, when I purchased a great fish from an old man, which he had just taken with great difficulty, he would not hand it over to me till he had cut off one of the pectoral fins to return to the *nitu*, or soul of the fish, lest he should come by harm.

The colour of the Timor-laut man is a rich chocolate brown; but here and there among them occurs a quite black-skinned individual, who is at once remarkable as being an exception to the prevailing colour. The texture of the skin is by no means coarse; often rather smooth and soft.

In feature the forehead retreats slightly from the prominent superciliary ridges, as seen in profile. *En face* it is somewhat flat. In the Malay region, in some the cheek-bones are very prominent; in others, again, they are as little observable. The brows are low, but not conspicuously hairy. The eyes are small and narrow, and in a few a slight obliquity is observable. In a few also the eyeball is very prominent, but in others by no means so. As regards the nose there are two distinct forms: one in which that feature is very low between the eyes, advancing with a straight dorsum to a *retroussé* tip, which discloses both nostrils conspicuously, the tip being markedly pointed. The other form is that in which the dorsum is higher between the eyes, is straight, rarely arched, and the tip pointed, depressed, and incurved to form a thick fat septum. In this form the nostrils are almost concealed, and the *ala nasi* much inflated. *En face*

both dorsa are straight, the first form exhibiting the nostrils fully, and the septum; the second form with dorsum compressed slightly in the middle, the nostrils not seen save slightly, and the *ala nasi* inflated. The upper lip is prognathous; the lower somewhat retreating, or orthognathous. The teeth of the upper jaw overlap those of the lower jaw, but this is not invariable, many of both sexes having the teeth evenly meeting.

From the Malay region the face rapidly converges to the small chin, with the cheeks hollow. It is not protruding, is round, and rather well shaped.

The ears are small, but a good deal disfigured by the large, irregularly bored and slitted holes made in the lobe, while the helix and scaphoid fossa are put out of shape by the series of smaller holes in which the earrings graduate from above downwards, from small to greater.

From the occurrence of straight hair among these people, and of the round-tipped *retroussé* nose, and the rich brown chocolate colour, I am led to suspect the intermixture of Malayan, or perhaps Polynesian, blood with the Papuan. The absence of hair on the face would seem to lend some weight to this suspicion. But I have seen in Sumatra, and inquired into their family history, true Malays with curly hair, and favoured with profuse whiskers and beard, as well as very hairy-breasted Malays (in Soerabaija); the straight hair and Malayan type of pose do not always coincide, though in some cases they do so markedly. I noted women in Larat with perfectly straight hair, and yet with the Papuan type of nose and face. In others frizzly hair, with a nose half Papuan, half Malayan. I noted also a young woman with quite the quiet, docile features and bearing of a Malay girl, and almost hairless body. All, however, have the boisterous and inquisitive manners of the Papuan.

That the Malay race has spread to this island, or that some connection with the Indo-Malayan region has taken place, seems to be indicated by the presence of the Tangalunga (*Viverridæ*), so commonly carried about by these people, and of the herds of buffaloes on the mainland, animals quite foreign to the Austro-Malayan region, which must have been brought by the Malays, though it is incredible that in their small prahus they should bring so great a quadruped as a buffalo. The presence of a small dove called in Java the *tercoocoor* (*Geopelia striata*) may also point in the same direction.

One of their customs is to kidnap and purchase slaves wherever they can. Perhaps in this way some infusion of non-Papuan blood may have come. It strikes us, too, that we have seen in an old map of Timor-laut two stations marked "Factory," indicating, I presume, footsteps of the East India Company.

Of the intellectual characteristics of the Timor-laut people I have formed no mean opinion. They are very clever carvers of wood and ivory; the "frame-heads" of their prahus especially attract attention by the elegance of the devices and the excellence of the workmanship. The central pillars in their houses are also most elaborately carved. They are intelligent workmen, and quick at understanding. They have often pointed out to us the beauty of the Bay in which they live, a circumstance which struck us very much, as in Sumatra, when the most gorgeous of landscapes has burst on our view, not one Malay has ever in our hearing, or by change of countenance, expressed the slightest surprise or admiration; while out in the forest they will pluck such bright flowers as they may meet with, and arrange them with taste in their ordinary comb, which is perforated for the purpose. Such a circumstance has never once come under our cognisance among the Indo-Malayans.

Their moral characteristics are such as are to be expected from an uneducated people subject to no restraint. These are all of a selfish nature. For one in distress they will show no sympathy or pity, if it will deprive them of anything. To give anything for nothing is an exceedingly rare circumstance among them. They have no feeling of gratitude. However often they may have received gifts from us, they have very seldom given anything in return. Even within an hour after receiving some gift, they will bring in exchange some necessary we have asked for, and demand the most exorbitant price for it, and will often take it away without accepting even a high price for it. Where they think there is no chance of detection they will lie most deceitfully and steal, though their *adat*, or custom, punishes this crime with slavery, from which the thief can be ransomed by a great sum. When sober they are good-natured, and do not seem to keep up their wrath, nor harbour revenge against an individual, though a man of a village with which they are at war they will unhesitatingly shoot down or stab, if they find a safe chance. When excited they are savagely cruel. They are very suspicious of each other and of their neighbouring villagers, and are ready to quarrel if one gains more than another. One man rarely undertakes any piece of work for this reason, as dissensions immediately arise; a little company of the whole village must have a share. When my house was building the Ritabel men were afraid of the Ridool and Waitidal men (two neighbouring friendly villages), because if these did not get a share in what I was to pay for a new house, they would make a disturbance. As it was, I purchased two old houses and re-erected them. Yet when I visited Waitidal these people exhibited the greatest animosity

against the Ritabel men, saying to me that they had exacted a most exorbitant price for the bamboos they brought me, and advising me to leave Ritabel and make a house in Waitidal, and *sell my goods there!*

Neither sex is very faithful to the marriage relation, but no immorality or indecency comes to the public gaze. In their speech they are more moral (as far as I can judge) than the Javanese or Malays. They have neither obscene carvings nor rites.

Their treatment of their children we both observed to be invariably kind and affectionate. The fathers carry about the children in the evening, "smelling" them and fondling them with every sign of affection. Even good-tempered children of other villages are carried about and petted by their neighbours. The mothers decorate their children profusely with beads and necklets, and encase their little arms in a perfect buckler of shell armulets. The youths and boys play in the evenings most vigorously, and the younger fathers often join them, while the crowd of villagers which always looks on takes a lively interest in the games. These games much resemble those of children at home.

A great amusement seems to be the sailing of miniature boats elegantly made out of *gaba-gaba* (or sago palm stems), which they enter for the championship in elegant regattas. They build, also, forts of sand, and defend them against their comrade foes with balls of wet sand. The shout from the onlooking crowd which hails a good hit tells of the interest excited. Most interest, however, is taken in a game which is one more of skill and precision than the others, played with discs cut off from the top of *conus* shells. Each player has two of these quoits. Each places one in a little depression in the ground, and from a crease at some distance he plays with the other quoit, so as to dislodge one from the row. If he fail to hit he has to return to the crease to play again, but if he *score* he plays from where his quoit rested; and when he fails the next in turn plays. Passing his right hand holding the disc round to his left side as far as he can stretch, steadying it with his left hand, he takes in this position steady aim, calculating with a glancing eye the spot he intends to hit, then taking a run forward a few steps to the crease, he delivers with all his might. Not only do the young lads and boys engage in this game, but even the grown-up men, amid much laughter and shouting. From a very early age the children begin to wade about the shallow margins of the sea, with bow and arrows in quest of fish, till, when they have reached an age of six or seven, they are quite expert in the art. And to see a youth draw a bow or throw a lance is a fine sight.

The Timor-laut people recognise no superiors. Though they have an *Orang Kaya* he has no more voice than any other full aged man. The "old men's" voice has some weight with the younger men, but they all speak out their mind boldly and fearlessly, objecting or agreeing, while the children look on, and the women—who have indeed a freer life, and are more independent and better treated than the women in many of the more civilised parts of Sumatra—are not backward in expressing their opinion. The general voice is the law of the village community.

Punishment for small offences is by fine, exacted by the verdict of the village. Great offences breed a quarrel, ending often in the death of one or more of the parties.

They have bravery of a kind, having little fear of death, whether occurring in battle or in the course of nature. They generally fight from behind trees, and a large number of their bucklers are made to protect them *à tergo*! When wounded, they at once retreat. They are not bloodthirsty when not excited to the height of passion. From what we have seen of the villagers of Ritabel, and others who have accepted the authority of the Dutch Government, they are rather peaceably inclined, and are now rather disposed to settle a dispute by payment or restitution instead of quarrelling. Though the Postholder recently placed in Larat has absolutely no power over them, and dare not order as he cannot enforce, they are so little bloodthirsty that they make no raid on the Keleobar people, who have assassinated several of their people treacherously, and though their trade with the Macassar people (who bring them all that they most prize—gunpowder, guns, clocks, knives, arrack, &c.) is entirely at an end, because they can no longer search for trepang and tortoiseshell, they choose to wait the coming of the Dutch Commission to settle the dispute. If, however, one of their enemies fall into their hands they become perfect demons, and execute the most horrible cruelty on their still living victim, before affixing his quarters on their public places.

The islands are very sparsely populated. Mr. Wallace, in his "*Australasia*" (page 432), speaks of a black, frizzly-headed savage people living in the interior. There are, however, absolutely no inhabitants in the interior of Timor-laut. Only along the coast are there any villages.

The language of the Larat people is, in a large number of words, similar to that spoken in Ceram and in Batoe Merah, a suburb of Amboina. On the mainland many of the villages have their own dialect or language. In the island of Maroe, to the north-west, there is a colony of Mohammedans, mostly from Tidoe and Ke.

The people of Timor-laut recognise some supreme existence whom they call *Docadilah*, and in their houses, over the principal seat, or *dodokan*, facing the entrance, is an image of the deity, with at its side a platter, or *oebilaan*, on which a little food and drink is placed, whenever they themselves eat. They carry with them also small images—if on tortoise-hunting expeditions, with a tortoise carved in front of the figure, and if on fishing excursions, with a fish in front.

Their houses are little more than floor and roof, elevated four or five feet above the ground, and entered by a stair through a trap-door cut in the floor, which is shut down at night. In front of the door is a seat of honour, with ornamented supports and a high carved back, on the top of which is placed the image of the deity as we have already described. On each of the four sides a space for sleeping is raised some 9 to 12 inches above the level of the *Rahanralan*, or floor of the house. The people sleep on small, neatly made bamboo mats, and rest their heads on a quadrilateral-shaped bamboo. In one gable is the *Foean*, or fire-place, and opposite to it, on a trellis-work platform, is placed the cranium of the father of the head of the house. Indian corn and other comestibles, and various articles are stored on little platforms stretching between the rafters, and their scanty clothing is suspended from the roof by elegantly designed and carved wooden devices.

Both men and women chew sirie and betel with chalk; the latter also grind down their teeth almost to the alveoli. The men, and some of the women also, are great tobacco chewers, but they do not smoke. Paraffin matches were offered to them as a gift, but they refused them, preferring to make fire by rubbing two sticks together. The advent of civilisation, in the person of an Amboinese, has introduced the thin end of the wedge in the matter of smoking, and already some of the younger men have begun to smoke. Ten years hence it will doubtless be an established habit.

The inhabitants of Timor-laut make their own spear-heads out of iron, and are skilful workers in copper and brass.

For musical instruments they use the gong (introduced by the Bugis traders), cylindrical ignana-skin drums, and a species of two-stringed violin made out of bamboo.

The climate is very unhealthy. After about nineteen days' residence in the island, all were seized with a fever of a very pernicious kind. The water is very bad; as there are nowhere any rivers, water must be collected from holes in the coral into which the rainwater penetrates. Exposed to the south-east wind, which blows incessantly throughout July, August, September, and October, it invariably produces a relapse of the fever.

Of the hunters who were on the island with us, one died from the effects of the climate within twenty-five days after our return, and another seemed to be in a dying condition.

The native's divisions of time are the sun's rising, height, and setting; so many moons of *Varat* wind and rain bring round the Timor sun and heat, and mark for them their *seasons*.

On the whole, the Tenimber group, though very interesting from a natural history point of view, can never arrive at any great degree of prosperity. For a time the forests may yield a rich harvest, and the seas contain much fish, trepang and tortoises; but the soil is so scant that little save Indian corn and a few roots can be grown with anything like profit. The climate, too, is very insalubrious. The people, however, are apparently easy of civilisation, and doubtless under the Dutch administration, which has now been set up in the islands at Larat and at Serah, great strides will be made in this direction, unless the "fire water" of Amsterdam and the arrack of Java work in an opposite direction. Amboinese schoolmasters will shortly be sent, we understand, to give them the rudiments of education. Travellers visiting these distant isles in the next generation may find, we hope, a population who have forgotten their incessant intertribal fights, and who have laid aside the spear and bow, without which he dare not now stir beyond the village palisades.

APPENDIX A.

Kindly furnished by C. H. READ, Esq., British Museum.

The following specimens were exhibited to the meeting, on the occasion of the foregoing paper being read:—

1. *Oeal lelah*, a comb, somewhat European in shape, made of a hard brown wood, inlaid with plates of bone, pierced in open work with elegant native designs. These plates are neatly attached to the wood by means of strips of thin rattan. In the middle at the back is a socket in which the following specimen (No. 2) is fixed. This comb is described as being "worn in the hair horizontally, decorated with feathers during the Sekalelah (*Tjikaleleh*), or war dance."
2. *Ornament of blackened wood*, resembling in form the fore part of the keel and prow of a canoe, having a peg at one end to fit into the comb (No. 1). It is carved with spiral ornaments, and has two birds' heads projecting near the middle. It is worn in the comb during the Sekaleleh, and in going out to war.

3. *Lora*, man's earring, made of ebony, with a strip of bone across the lower part. The form is graceful, somewhat pear-shaped in outline, the upper part open to allow the ring to hang in the ear.
4. *Lora*, man's earring of brass, in form exactly like the eye of a hook and eye. From the island of Vordate.
5. *Spindle (sulcano) and basket (soelveli)*, containing the raw cotton. The spindle is neatly made with a five-sided pointed head, the whorl being a disc of coconut shell. Another specimen in the collection has a whorl made of European earthenware. The basket is ingeniously plaited in rattan, having three rows of bosses projecting round the base.
6. *Sorko*, described as a "spoon used in cooking." In form, however, it is more like a knife, made of blackened wood, and having the figure of an animal on the oblong end of the handle.
7. *Kiliwa*, "suspended from the roof for hanging spoons from." Of these there are three in the collection, all of different forms, the only feature in common being a number of points on which to hook the spoons.
8. *A kind of net of plaited leaf*, suspended from the roof for holding the *Phenga* or eating cap (*sic*), or for plates, &c. A clever contrivance.
8. *Two anklets of brass worn by women*. Heavy penannular ornaments, having at the ends rude representations of the human face in relief.
10. *Rattan cradle (siwella)*. This is the form described in the text (p. 12).
11. *Figure head of a prahu of wood*, representing a pig (?), the hind legs bent inwards. The whole is kept in place in the boat by a bolt passing transversely through the base.
12. *Belt (calco)*, a broad band of the stem of a palm fastened by a flat peg passing through loops on the ends which fit into each other. This is mentioned in the text.
13. *Drum used in the war dance*. This is the same general form as the New Guinea drum, but of a more simple outline, circular in section, and diminishing gradually to the base where there is a rim; the end is open. The top is covered with the skin of a snake or lizard.
14. *Buffalo hide corselet*. There can be little doubt that this is a native copy of a sixteenth century European cuirass, although it stops beneath the arms, and would thus be no protection for the upper part of the chest. It is the more probable as Mr. Forbes obtained from Ceram an

exact copy in brass of a sixteenth century morion, also included in the collection.

15. *Shield of the type common among the wild races of the Archipelago.* A long narrow piece of wood, somewhat curved longitudinally, with carving, and some traces of colour, and with tufts of hair ornamenting the front.
16. *Pomali* sign; "to represent the skull of father, which occupies a place in the house facing the *toean*, or fire-place." This appears to be in case of a father dying in battle, and to be an improvement on the coconut mentioned in the text. This specimen is formed of a rudely globular block of wood, one side representing a human face, the eyes and teeth made of pearl shell and black wood.
17. *Lalœni*, a pillow. This is exactly the Chinese pillow, being made of bamboo squared, and the edges somewhat rounded, to be more easy for the neck of the sleeper.

All these specimens are described as having been obtained in Ritabel village, Larat, Timor-laut.

APPENDIX B.

Vocabulary of Words used in the Ke Islands and in Timor-laut (Larat).

Compiled by H. O. FORBES, Esq.

Vocabulary.	Ke Islands.	Timor-laut (Larat).
Anchor .. .. .	.. .. .	Vatœ.
Anchor, cord .. .. .	.. .. .	Warat.
Anklets .. .. .	.. .. .	Riti.
Ant	Kirkim .. .. .	.. .. .
Arm	Aroemoed	Vetit.
Arm, fore .. .. .	.. .. .	Tanoœvoer.
Armlet of shell .. .. .	.. .. .	Sistoh.
Armlet of ivory .. .. .	.. .. .	Lela.
Ashes	Knaboœn .. .. .	.. .. .
Bad	Sisian	Sian.
Bamboo	Temar	Temar.
Banana	Mœœp	Mœœ.
Bat .. .. .	.. .. .	Yabar.
Batatas .. .. .	.. .. .	Erns.
Bathe	Loœœk	Titloœœita; Talinoœ.
Beads .. .. .	.. .. .	Marœœmoet.

Vocabulary.	Ke Islands.	Timor-laut (Larat).
Bed	Rin	Talta.
Belly	Eboen	Ewoen.
Belt, of sheath of <i>Borassus</i> .. .. .	.. .. .	Calco gnaman.
Belt, woman's .. .. .	.. .. .	Calco.
Beautiful (view) .. .. .	.. .. .	Laboeang.
Bird	Manoet .. .. .	.. .. .
Black	Metnétan	Natoan.
Blood	Larah.. .. .	Lara.
Blood-vessel .. .. .	.. .. .	Oerat-vali.
Blue	Timtoem	Nifali.
Boat	Habo	Ra.
Body	Oeling .. .. .	.. .. .
Bone	Loerin	Loren.
Bow	Temar .. .. .	.. .. .
Box	Sungoh .. .. .	.. .. .
Boy	Kaet-roet	Kosokoe.
Breast, male and female	Boeboer : Sois	Boeboe : Soesoe.
Bring .. .. .	.. .. .	Mleba.
Butterfly.. .. .	.. .. .	Aikoean.
Cage .. .. .	.. .. .	Bahankan.
Cup, of Calabash, for eating out of .. .. .	.. .. .	Phenga.
Chain, girdle worn by women .. .. .	.. .. .	Eboer.
" cord part of it .. .. .	.. .. .	Eerit.
" button for fastening .. .. .	.. .. .	Matan.
Chalk .. .. .	.. .. .	Yafcer.
Child, male ; female	Yanad	Kosokoe-rata ; yanad.
Chin .. .. .	.. .. .	Demid.
Chopper	Gnir .. .. .	.. .. .
Clouds .. .. .	.. .. .	Moetan.
Coat .. .. .	.. .. .	Ravit.
Coco-nut ; young ; old.. .. .	Gnoer.. .. .	Gnoer ; gnoer - voes ; gnoer-ka.
Cold	Tabrinin	Ridmia.
Comb .. .. .	.. .. .	Oeal.
Come	Modo .. .. .	.. .. .
Cradle	Wel-wel	Siwèla.
Dance .. .. .	.. .. .	Tabar.
Dance song .. .. .	.. .. .	Sekilela.
Daughter	Yanad vat vat	Yana ma vata.
Day	Hamar .. .. .	.. .. .
Deity	Doead	Docadilah.
Doll .. .. .	.. .. .	Taran.
Door	Fid	Moean.
Ear	Aroen.. .. .	Aroed.
Earrings (of gold) ; earrings (of dugong) .. .. .	.. .. .	Lor lora ; welwelak.
Earth .. .. .	.. .. .	Elanoe.
East .. .. .	.. .. .	Timor ; mololan.
Eat	Tuan	Mame, Tufnan.
Eclipse .. .. .	.. .. .	Rarnock, faria.
Eggs .. .. .	.. .. .	Mata-teleur.
Evening.. .. .	.. .. .	Leriwava.
Exchange .. .. .	.. .. .	Heloe.
Eye .. .. .	.. .. .	Mata.
Eyebrows .. .. .	.. .. .	Mata-toevin.

Vocabulary.					Ke Islands.			Timor-laut (<i>Larat</i>).		
Face	..	..	..	..	Mahad	..	..	Wahad.		
Far	..	..	..	..	..	..	..	Roro.		
Father	..	..	..	..	Yamam	..	..	Yaman.		
Fathom	..	..	..	..	Ref	..	..	Erefa.		
Feather	..	..	..	..	Manvoen	..	..	
Female	..	..	..	..	..	..	..	Vata.		
Finished	..	..	..	..	Eenrok	..	..	Rokrook.		
Fire	..	..	..	..	Yaf	..	..	Yafoe.		
Fish, to fish	..	..	..	..	Wooet	..	..	Woevet, ián, dawa- wóá.		
Flesh	..	..	..	..	Hin	..	..	Wawoe.		
Flower	..	..	..	..	..	..	..	Ofoeven.		
Fly	..	..	..	..	Ráboer	..	..	
Foot	..	..	..	..	Eaad	..	..	Eadroan.		
Forget	..	..	..	..	Oebloefang	..	..	Rablufan.		
Fowl	..	..	..	..	Manoet	..	..	Manoet.		
Friend ¹	..	..	..	..	..	..	..	Ridang.		
Fruit	..	..	..	..	Bocai	..	..	
Give	..	..	..	..	..	..	..	Malabokoe-ria.		
Go	..	..	..	..	Elboea	..	..	
Gold	..	..	..	..	Mas	..	..	Mas.		
Good	..	..	..	..	Boek	..	..	Lolin.		
Great	..	..	..	..	..	..	..	Dawan.		
Gum	..	..	..	..	..	..	..	Natal.		
Hair	..	..	..	..	Moeroet	..	..	Wooet.		
Half	..	..	..	..	..	..	..	Tera.		
Hand	..	..	..	..	Limad	..	..	Lamad tanan.		
Hard	..	..	..	..	Oesin	..	..	Nangrebat.		
Harpoon	..	..	..	..	..	..	..	Tear.		
Head	..	..	..	..	Oed	..	..	Oeloed-watoel.		
Hear	..	..	..	..	Mdenar	..	..	
Heel	..	..	..	..	..	..	..	Ratawoe.		
Here	..	..	..	..	Odanie	..	..	Hawobrokia.		
Honey	..	..	..	..	Wenan	..	..	
Hot	..	..	..	..	Nanch	..	..	Nanganeh.		
House	..	..	..	..	Rahan	..	..	Rahan.		
How many	..	..	..	..	Hongakbo	..	..	Efira.		
Husband	..	..	..	..	Briuran	..	..	Hawan.		
Indian corn	..	..	..	..	..	..	..	Selaroe.		
Iron	..	..	..	..	Tman	..	..	
Island	..	..	..	..	Nuhoe yanet	..	..	
Knee	..	..	..	..	Ead toer	..	..	Toerad.		
Knife, sheath	..	..	..	..	Gnib	..	..	Enko, akoeda.		
Know, don't	..	..	..	..	..	..	..	Wolemgka.		
Kris	..	..	..	..	..	..	..	Sariba.		
Large	..	..	..	..	..	..	..	Dawon.		
Leaf	..	..	..	..	Roan	..	..	
Leg	..	..	..	..	Eang (man's leg), eam (another)	..	..	Ead.		
Lightning	..	..	..	..	..	..	..	Fitik.		
Little	..	..	..	..	Roet	..	..	
Loincloth	..	..	..	..	..	..	..	Ro-ok.		
Long	..	..	..	..	Bloöl	..	..	Blawat.		
Lorie	..	..	..	..	..	..	..	Leloer.		
Louse	..	..	..	..	Oet	..	..	

¹ In Yamdena (mainland) friend is *Kee*.

Vocabulary.	Ke Islands.	Timor-laut (<i>Lares</i>).
Male .. .. .	.. .. .	Trana.
Man	Tomata	Tomata.
Man, young .. .. .	.. .. .	Ververun.
Manioc .. .. .	.. .. .	Tochal.
Many	Abeed	Leher.
Marry	Tafan	Sefa.
Mat	Dar .. .. .	.. .. .
Monkey	Boeoe .. .. .	.. .. .
Moon	Oean	Voelan.
Morning .. .. .	.. .. .	Ververra.
Mosquito	Emimoes .. .. .	.. .. .
Mother	Nen	Liti.
Mouth	Guen	Soemar.
Nail	Kukud .. .. .	.. .. .
Nail, finger	Kukud .. .. .	.. .. .
Navel .. .. .	.. .. .	Foeart.
Neck .. .. .	.. .. .	Relad.
Night	Dedan .. .. .	.. .. .
No, simple negative	Waid	Walsafa, wah.
No, refusal of anything	Naä	Nafena.
Noon .. .. .	.. .. .	Lera si lola.
North	Madmar	Mormar.
Nose	Nieroen	Nieroot.
Oil	Gnoe .. .. .	.. .. .
Orchid .. .. .	.. .. .	Woekoe.
Pig	Babi	Bab.
Pillow .. .. .	.. .. .	Loeloeni.
Poison .. .. .	.. .. .	Elaän.
Post	Fler .. .. .	.. .. .
Rain; it rains	Doöt	Doöt; doöt oefiroe.
Rat	Karoe	Manhowan.
Red	Voelvoeli	Noervoeli.
Remember; remember well	Oefang nangken	Ninana; masilolin.
Resin .. .. .	.. .. .	Natal.
Rice	Kokat	Wanan.
River	Host	Noar.
Road	Oed .. .. .	.. .. .
Root	Waär .. .. .	.. .. .
Sagueir	Toest	Toek.
" Bamboo for holding .. .. .	.. .. .	Ravivit.
Salt	Masin	Sierak.
Sand	Gnwoer	Gnoeer.
Say; what do you say? .. .. .	.. .. .	Onnalaka.
Sea	Laut	Meti, tabat, baletan.
See	Mlik	Misilik.
Sell	Oemfed	Fedi.
Send .. .. .	.. .. .	Nigaän gnnoe.
Sew	Mhoar .. .. .	.. .. .
Shell .. .. .	.. .. .	Mahan.
Shell, great clam .. .. .	.. .. .	Mahan.
Shield	Lär	Salawakoen (long), Gnelia (short).
Silver	Rubi	Mas ninoer.
Sirie; basket for sirie	Maneran	Naän, loevoe.
Skin	Ulid .. .. .	.. .. .
Sky .. .. .	.. .. .	Lanit.

Vocabulary.	Ke Islands.	Timor-laut (<i>Larat</i>).
Sleep	Tatoeb	Toeba.
Sleeping mat .. .. .	.. .. .	Clari bangkoko.
Small .. .. .	.. .. .	Koko.
Smoke	Yafmahum	Yafocman.
Snake	Rubai	Nifa.
Son .. .. .	.. .. .	Yana ma brana.
Sour	Kahir	Kabi.
South	Tranan	Trana.
Speak	Tangriki	Tangrichi.
Spear	Nangah	Boenoet.
Spoon .. .. .	.. .. .	Oeroe.
Star	Nar	Narra.
Suckle .. .. .	.. .. .	Toi masoesoe.
Sugar-cane .. .. .	.. .. .	Tevoe.
Sun .. .. .	.. .. .	Lera.
Sweet	Kasloeir	Minaminat.
Tattooing .. .. .	.. .. .	Belbela.
Teeth .. .. .	.. .. .	Nifat.
There (to) .. .. .	.. .. .	Tatin-heri.
Thread, thread of which native sarongs are made	Kar	Avat, alōan.
Thumb .. .. .	.. .. .	Limad, ketch.
Thunder	Nafdad	Dodong.
Ties, made of sugar-palm .. ..	.. .. .	Eira.
Toe, great .. .. .	.. .. .	Eäd tanan ketch.
Toe, second; little toe .. ..	.. .. .	Eäd tanan, froean kewaren.
Toe-nail .. .. .	.. .. .	Eäd ooen.
Toe-ring .. .. .	.. .. .	Sitanea.
To-day .. .. .	.. .. .	Lerwawa.
To-morrow	Meran	Vera vera.
Tongue .. .. .	.. .. .	Eard.
Trousers .. .. .	.. .. .	Kada.
Understand	Okar	Fanowak.
Very; very beautiful .. ..	.. .. .	Roak; lolin roak.
Wash	Boerik	? Wangir.
Wash, hands .. .. .	.. .. .	Tiffaroe trame.
Water	Wehr	Oeer.
Waves, large, waves	Roe-roeat	Saksahan, lalawa.
Wax	Lilin .. ..	.. .. .
Weep	Mroon	Fakar.
West .. .. .	.. .. .	Warat molalan.
White	Nangear	Nangear.
Wife	Hoöd .. ..	.. .. .
Wind	Nioet	Neët, lar.
Window .. .. .	.. .. .	Yanella.
Wing	Halaän	Halaän.
Wire	Bilbal	Ververi.
Wish	Rangen	Inan roh.
Woman	Vat-vat	Vata.
Wood	Ai	Saüs.
Work .. .. .	.. .. .	Toetwafa.
Yellow	Toemtoem .. ..	.. .. .

DISCUSSION.

Mr. THISELTON DYER sent the following communication in explanation of the origin of the preceding report.

In a letter addressed to Sir Joseph Hooker, in 1880, Mr. H. O. Forbes wrote from Sumatra offering, if some assistance could be forwarded him, to attempt an expedition to Timor-laut for the purpose of investigating its natural history—"an object," as the writer stated, "the accomplishment of which is desired both by botanists and zoologists."

Application was made to the British Association for aid in the furtherance of Mr. Forbes's plans. A committee was appointed in 1880, which was reappointed in 1881 and 1882, and grants, amounting in the aggregate to 150*l.*, were placed at its disposal.

After delays arising from various causes Mr. Forbes, accompanied by his wife, eventually succeeded in reaching Timor-laut in July, 1882, and remained there till the following October. A portion of his collection, consisting of a selection of the birds, has already reached England, and an account of them (including seventeen new species) was laid before the Zoological Society, on February 20th, by Mr. Selater.

Mr. Forbes also furnished the Committee with a detailed report of the circumstances of his residence in the Tenimber group. As this report was principally occupied with an interesting account of the natives of the islands and their habits, the Committee of the British Association was of opinion that this was of sufficient importance to merit being communicated to the Anthropological Institute. Under their instructions Mr. Thiselton Dyer, as Secretary to the Committee, placed it in the hand of Mr. John Evans, for the purpose of submitting it to the Institute.

The PRESIDENT stated that the results of a cursory examination of the twelve crania which Mr. Forbes had collected were, that eight were brachycephalic, and of decidedly Malay type; one was dolichocephalic, prognathous and with large teeth, indicating Papuan or Melanesian affinities; and the other three were more or less intermediate. This is what might have been expected on the border-land of two distinct races; but the great preponderance of the first named was very marked. Nearly all showed signs of artificial flattening of the occipital region. He hoped at a future time to give a fuller account of the characters of this interesting collection.

Mr. KEANE remarked that Mr. Forbes's experiences in Timor-laut went far to confirm the views now generally entertained regarding the extremely complex nature of the ethnical relations throughout the whole of Malaysia and Polynesia. Even in this somewhat secluded island the same conflicting elements seemed to be present as in the surrounding insular groups. From Mr. Forbes's careful observations, supplemented by Professor Flower's remarks on the

skulls now exhibited, it must be evident that Papuan, Malayan, and even Polynesian tribes had here become intermingled in diverse proportions, the result being a distinctly mixed race, such as was elsewhere in this region often designated by the inconvenient term "Alfuro." Timor-laut, however, seemed to present the peculiarity that the various elements had not here become so completely amalgamated as in most of the neighbouring islands. Hence the remarkable phenomenon of frizzly and lank hair, brown and black complexion, very tall and very short stature, dolichocephalous and brachycephalous heads, &c., all still found side by side in the same village community. The resemblance in so many of the crania to those of the brown Polynesian race of Samoa, Tahiti, Hawaii, &c., was very striking, and in this connection it was noteworthy that Timor-laut must have been one of the last islands occupied by this race in Malaysia during its eastward migration to the remote archipelagos of the Pacific. It was easy to suppose that some members of the family may have been left behind, and these mingling with subsequent arrivals from Papuasia and Malaysia may have thus contributed to the present heterogeneous ethnical relations of Timor-laut.

Mr. JOHN EVANS made a few remarks upon the paper, and the objects exhibited in illustration of it; among other matters calling attention to the resemblance between some of the habits described—such as the sacrifice of a pig on solemn occasions—and those of the more civilised occupants of the shores of the Mediterranean in early times.

Dr. OPPERT desired information as to the language of the natives.

Mr. CARMICHAEL wished to ask whether the author had sent any explanation of the nature of the ownership of land in Timor-laut—whether, i.e., the expression, used by Mr. Forbes, "Village Community," was to be taken in its strict sense, or whether there was any definite statement showing the ownership to be resident in the Village Community, if such really existed, or the House Community, or in the tribe or the family, or, lastly, whether there was any trace of individual ownership. Mr. Carmichael also inquired whether Mr. Forbes had described the Religion of the inhabitants.

Mr. RUDLER explained that Mr. Forbes, as a naturalist, had probably paid more attention to observations on the physical characteristics of the people than to such questions as those raised by Mr. Carmichael, and he pointed out the difficulty which a person resident for only a short time in the country, and with an imperfect command of the language, would inevitably experience in any inquiry into the religion of an uncivilised people. A vocabulary of words collected by Mr. Forbes accompanied the report.

On the CLASSIFICATION of LANGUAGES in conformity with ETHNOLOGY.—By GUSTAV OPPERT, Ph.D., Professor of Sanskrit in Madras.

THE science of language is a physical science, and its proper place is in the natural history of mankind. Articulate language is a gift which a benign Providence has vouchsafed specially to man. As articulate speech is a speciality of man, and men, though differing from one another in external appearance and internal attributes, are as a species *one*, and further, as speech is common to all human individuals, unless they are deprived of it by some cause or other, it follows that every person is able to speak, up to a certain degree, every language. The language of the individual is the product of various elements; of the family in which he is brought up—modified, moreover, by the natural influences of the locality and the climate in which he lives. As a separate individual, every man is, besides, endowed with an intellect of his own which will occasionally appear on the surface. We distinguish clearly two very different influential elements which produce and define the speech of the individual; the one, influencing the utterance of sound, is *physiological*; the other, representing the manner of thinking, is *psychological*.

As a rule, an original language springs up in the infancy of national life, expressing the peculiar mental disposition of the community who used it, and retaining the impression which constitutes its individuality. Everybody possesses the latent capacity of speaking, as has been said before, every language; the descent of the individual need not, therefore, necessarily coincide with, or become apparent from, the idiom he uses.

Yet it may be possible that linguists, well acquainted with the peculiarities and intricacies of the dialects they have particularly paid attention to, will discover in the expressions of those who use languages foreign to them by practice or descent, eccentricities which can only be sufficiently explained by their inborn individuality. In order not to be misled into wrong conclusions, one must, in questions of language and race, take into consideration, if possible, the original and not the adopted language; and that, too, in a form the least corrupted and mixed with modern and foreign elements.

We must, moreover, not lose sight of the fact that a person who learns a foreign language, and who does so voluntarily or compulsorily, either for temporary or for permanent use, submits himself to the rule of that language. He tries to speak it, to think in it according to its proper mode, *i.e.*, he assumes its pronunciation, grammar and syntax; he loses, indeed, to a certain

degree, his personal independence, while he accommodates himself to the whims and caprices of his new mistress. The real point at issue is, therefore, not whether the language one speaks indicates the race to which one belongs—as long as that race has been preserved in its purity—which it surely does not; but whether a language, if used by foreign individuals and nations, retains its original character. There is no doubt of it. A language preserves, as it were instinctively, its peculiar construction, and if it does not always coincide, either with the particular nation or person who speaks it, it certainly indicates the race of those who spoke it first, and this, in spite of all apparent change, and it retains the mode of thought of those among whom it first sprung up as their natural means of communication, though that race itself might exist no longer.

Languages exhibit, like the persons who speak them, the different phases of life, with its commencement and development, its decay and death.

The relationship of parentage and offspring among living creatures is also found among languages. A language can be many times propagated or regenerated, but it dies as soon as its daughter-languages establish themselves independently, or it ceases to supply a real want. In nature and construction similar, often even identical, yet a mother-language differs from its daughter-language as a mother from her daughter.

A language can adopt and create as many words as it pleases without changing its character, but it cannot alter its grammar, its syntax, without becoming another; for grammar represents the inmost mode of thought over which the individual person or nation has no real control.

This very fact proves that the original language of a people indicates its race, and *vice versa*. Comparative philology and ethnology, therefore, are allied sciences which supplement each other. No system of comparative philology is true unless it fulfils this condition; but no linguistic classification can be elaborated unless the expressions which define the family and social life are taken into account.

Ethnological research is deficient if it takes alone into account the outward appearance of men, as philological conclusions cannot only be based on external characteristics as has been done hitherto.

The object and aim of speech is communication, which certainly varies, in point of clearness and perfection, according to the physical and intellectual state of the individual. The ruder the speaker, the cruder the speech. Thus it is not only possible, but even highly probable, that the original enunciations of a language are interjections.

If interjections are, according to their nature, as a rule short and monosyllabic, the original roots of words should be also monosyllabic. "Interjections are," as Professor Max Müller observes, "only the outskirts of real language; language begins where interjections end." But these outskirts are already within the bounds of language, and form the lines of its natural frontier.

Interjections, or whatever name we may give to the main essence of words, precede the other forms of speech; nay, they are most likely the very nucleus from which the latter are formed. A word embodies, as it were, an idea, whether this refers to a concrete object or to an abstract thought. Originally the incoherently uttered word comprised within itself the different variations in meaning as represented later by the different forms of speech. This concentration of the various shapes which mental or material essences may assume in one unchangeable body, their crystallisation in one single form, is most strikingly exhibited in the so-called monosyllabic languages, where each word represents to some extent a mere atom.

Monosyllabism is thus considered by many to be original to all languages, though only a few retained it in their later development. The monosyllabic tendency which prevails in some languages is certainly a most interesting feature, productive, moreover, where consistently adhered to, of other strange peculiarities, *e.g.*, of a singular mode of pronunciation, intonation, and accentuation; but as the various monosyllabic dialects in different parts of the globe, in Asia, Africa, and America, though agreeing in their outward monosyllabic phenomenon, yet disagree in their internal construction by differently expressing thoughts and ideas, monosyllabism by itself cannot well be raised to a standard of classification, as it is peculiar to many idioms, which are dissimilar in other respects.

No doubt the assumption is widely spread, and possesses great semblance of truth, that the characteristic mark of the so-called Semitic languages lies in the dissyllabic formation of their roots; but whether this is really a fact remains to be proved. The majority of Semitic roots display a dissyllabic form, but many of the most important words in Semitic dialects are monosyllabic, and it is not beyond the range of possibility that the dissyllabic or trilateral and quadrilateral roots are based on and derived from monosyllabic roots.

Even when upholding the principle that every dialect has a monosyllabic beginning, one must not lose sight of the fact that this principle is affected as soon as single ideas are combined. However loosely thoughts are linked together, this juxtaposition must influence them. But this composite idea is still main-

tained in monosyllabic languages by separate and unmodified symbols.

To the morphological classification monosyllabism represents the first stage, the radical or isolating; the two remaining are the terminational or agglutinative, and the inflectional or amalgamating. There is no doubt that the system expounded in this morphological classification is equally feasible, and at first sight convincing. But, on the other hand, can we anywhere, in any dead or living language, point out such a gradual change? Or, in case that languages exist where such changes are still occurring, can such a classification be accepted as final? Or can it be regarded as a sufficient classification, when it contains under each division languages which are totally dissimilar? Every language must, in the course of its development, pass through certain phases of growth, but only within the sphere of its peculiar system does it get to maturity. Moreover, the peculiar principle which guides the external development of a language—whether it be monosyllabic, incorporative, euphonic, alliteral, agglutinative, or inflectional—is not a safe criterion by which to measure the mental capabilities of those who speak such dialects. The real test of a language consists in its being able to express lucidly, and to communicate distinctly, all the various modulations of ideas which occur to the speaker.

The capabilities of men lie within certain well-defined limits, beyond which there is no progress. This fact applies also to the languages they speak, and, however gradual this development from infancy to maturity may be, our present knowledge does not enable us to describe step by step the stages passed through. Individual capacity and incapacity are left to their own devices on their way onward, and though the duller man may progress slowly and halt midway towards the final aim reached by the more gifted competitor, both may not pursue the same direction, and where the former prefers a roundabout road, the latter may choose a short cut.

To observe and to mark the external peculiarities and diversities occurring in languages is no doubt of very considerable importance, because, without a minute knowledge of the details, a proper insight into the total cannot be obtained; but such a proceeding ought to be supplemented by an investigation into the causes which produced those peculiarities. The internal process of weaving thoughts influences the external form of speech, and if these two actions, which originate from different parts of the human brain, are well studied, the results derived from their investigation, when joined together, will constitute the true basis of a science of language. The external form of articulate speech is represented by sound, and we call it *vocal*;

the internal we call *mental*. The investigation of, the latter is very difficult, as we can only examine it by the sounds, to which it assigns meanings, but which sounds by themselves are meaningless.

It is in the home that language becomes an actual necessity. A man who lives by himself, apart from human beings, does not require speech. But when once the system of companionship of a family is introduced, circumstances are changed.

Judging from probabilities we may conclude that man and wife, especially in primeval times, belonged to one and the same race, though that race may possibly have been split up into numerous, generally even hostile clans. It does not matter for our purpose what sort of domestic life is prevailing, whether it is founded on polyandry, polygamy, monogamy; the difference in the forms of marriage does not affect the construction of the words denoting the nearest degrees of consanguinity. The first material change in a young household is the birth of a child, and those who were previously living together as man and wife become respectively father and mother. It is the child which confers on its parents the dignity of fatherhood and motherhood, and the words for father and mother are, in the great majority of languages, identical with the first sounds a child pronounces, and these sounds, if once permanently applied to signify father and mother, form afterwards the roots for words which convey the chief qualities supposed to be found in parents when regarded from a filial point of view. It is thus not surprising that, *e.g.*, the Sanskrit roots *pā* and *mā* convey the meaning of feeling or protecting, and of making or measuring, as they appropriately express the qualities expected to be found in a father (*pitri*) and a mother (*mātri*).

Comparing, as far as we are able to do, the words denoting kinship with each other, as they occur in the several languages, one most peculiar feature will immediately become apparent. The manner of naming is twofold. The one shows a tendency to observe a certain most prominent quality in a person or in an object, and to name its possessor accordingly; the other deals with the individual specimen as a concrete body, distinguishable from a similar one by a constitutional difference, such as sex &c., which discriminating mark is separately added or peculiarly expressed. This distinction, in order to be recognised as really existing, must show itself throughout the system, at all events in the nearest and most important degrees of affinity. The character possessed by parents must, to some extent, reappear in their children; the same peculiarity which guides the mind of parents when naming their children must manifest itself in their children when they address each other as brothers or sisters.

The languages in which parents call their children sons or daughters, and in which those sons and daughters call each other brothers and sisters, are different in thought—that is, in expression and construction—from those where the former are known by the name of male children and female children, and the latter by that of elder or younger brother and sister. The difference between those two modes of expression is that the one manifests a power of abstraction, which is wanting in the other, as it adheres to the concrete substance. The inclination towards abstractness and concreteness would not be so significant and deserving of notice if it did not show itself in other forms again and again in various expressions of a language, corroborating the tendency observed in the denomination of relations. The custom which prevails among many tribes of using terms of kinship instead of proper nouns as modes of address among relatives enhances the importance of such words. From this concrete mode of address, by means of the words of relationship, to the practice of using an abstract and now more common form of address, represented by the pronoun, is a wide step; but these terms of consanguinity and the pronouns retain a certain affinity and connection between each other, which manifests itself in the manner in which both ignore or express gender.

According to the mental propensity towards concreteness and abstractness possessed by the various human races, and exhibited by them in their languages, I propose to divide the latter into two classes—into concrete and abstract languages. Both divisions are in their turn re-arranged into groups. Into these groups are then classed the various languages, conformably to the differences they exhibit in their external or vocal appearance, whether it be incorporative as the American, alliteral as the African, monosyllabic, agglutinative, or inflectional.

As abstraction is the result of deduction from the concrete, it is, in consequence, posterior in time to it. It pre-supposes a deductive analytic faculty, which is not common to all. The capability of passing from concreteness to abstractness is the touchstone of languages, as it manifests the progress in the capacity of thinking, which goes on in the human brain.

While concrete dialects are thus originally without names for abstract qualities, abstract languages retain the ability to use concrete expressions, though perhaps in a lower degree. It may appear astonishing, but it is not the less true, that a language, unless it undergoes a radical change by which its nature is totally altered and a new dialect created, does not change the characteristic inclination which it manifests in the expression of the different degrees of consanguinity, though the terms themselves may be changed and modified repeatedly; for the terms

are represented only by sounds, which sounds *per se* are without any significance.

The terms *duhitri* and *bhrātri*, daughter and brother, were not, we may be sure, the words first used to denote the relationship of daughter and brother among the people whose language developed itself into Sanskrit; but they are at all events the representatives of previous abstract terms. Abstract languages are able to form, and form indeed at times, concrete terms; but the presence of original abstract expressions decides the question.

In all abstract and in nearly all concrete languages the words signifying father and mother can be traced to the simple and unconscious exclamations of children, whatever they may be. The words distinguishing between father and mother once settled, the child learns, gradually, whether it has to call its father or mother *pa* or *ma*, *ata* or *ana*, &c., &c. But this is not the only mode of naming. A child, especially if it has been brought into closer contact with one of its parents (this will be, as a rule, its mother), regards this parent as *the* parent, and gives to that parent a peculiar name. When it has afterwards become aware of the existence of two parents it preserves the original term, which loses its primitive application to a certain individual, and being taught to affix to it the words denoting male or female, distinguishes between the male parent, or father, and the female parent, or mother. This nomenclature prevails, *e.g.*, among the Nancowry Islanders, as well as among the Hawaiians and other kindred tribes.

Through modulation of voice, which effects a change in the sound of the letter, a word may assume a different meaning. Thus altered in pronunciation and sense it becomes in course of time a separate term, and the former identity of the two words is forgotten.

The division of letters into hard and soft, or into close and open, and the application of this principle to speech, is the foundation of the euphonic system met with among such distant tribes as the Tungusians of Asia, the Negroes of Africa, and the Redskins of America. It is among Asiatic and American dialects that the diversity of sound is often employed to express the difference between male and female sex, instead of describing it by using the adjectives "male" or "female." The softer voice being peculiar to women, the softer sound, or what was considered to be so, was chosen to denote the female sex, and the harder tone was applied to designate male individuals, *e.g.*, in the Mandchu language *Chacha* signifies "man," *Cheche* "woman," *Ama* "father," *Eme* "mother," *Ahun* "elder brother," *Eien* "elder sister."

The most important difference existing between children is

offered undoubtedly by sex. Concrete languages do systematically exclude gender; they do not—a very few instances excepted—possess equivalent terms for such abstract words as “boy” or “son,” “girl” or “daughter,” but preferring as their starting-point the genderless or neutral expression “child,” join to it the sexual determinatives “male” or “female.” Occasionally even the word “child” is omitted, and the terms “male” or “female” are deemed sufficient to denote son or daughter; *e.g.*, in the Yoruba, Hawaiian, Karen, and Telugu languages, “child” is respectively expressed by *Oma*, *Kaiki*, *Pho*, and *Bidda*; “male” by *kuri*, *kana*, *khwa*, and *moga*; and “female” by *bere*, *vahina*, *mu*, and *ada*. A boy is, therefore, respectively called *Oma kuri*, *Kaiki kana*, *Pho khwa*, and *Moga bidda*; and a girl *Oma bere*, *Kaiki vahina*, *Pho mu*, and *Ada bidda*.

When contrasting this mode of expression with that adopted by abstract dialects, we directly perceive that the words chosen for “boy” and “son,” “girl” and “daughter,” indicate certain qualities usually ascribed to children. We may remark here, that we do not contend that concrete expressions of relationship were never used in abstract languages; but we say that if they were used they were dropped at a very early stage, so that hardly any traces of them can now be found in any abstract language. In the Semitic languages we meet with words signifying “son” and “daughter,” but no *bond-fide* equivalent for “child.” From this fact we can infer that a third or neuter gender does not exist in the Semitic group of languages. Its presence among the Aryan branch is evidence of the existence of a neuter term for “child.”

The word “child” is a strictly concrete expression, designating the young, the offspring of man, and must not be regarded as indicating a child *in abstracto*, for all human children belong to the same species of man. It must not be classed in the same category as, *e.g.*, the word “animal,” which can be taken as an abstract formation; and there exist, indeed, tribes who have bestowed a name on all the animals they know, but who have never thought to use a word for animal.

While parentage and filiation admit only two essential component parts, kinship and sex, the relationship between brothers and sisters includes, besides a third element, that of age.

The non-existence of words equivalent to brother and sister in a language must be, to those who converse in abstract tongues, and who are accustomed to them from their earliest childhood, a very striking phenomenon; but an examination into this subject will soon disclose the fact that the absence of such terms is the rule, and their presence the exception. All concrete

languages can possess a general expression of consanguinity irrespective of sex and age; e.g., in the Khasi dialect *Para* denotes consanguinity pure and simple, but to distinguish between brother and sister, the words for "male" and "female," *shinrang* and *kynthai*, must be added, and *Para shinrang* stands for "brother," *Para kynthai* for "sister."

Children who live together under their parents' protection differ from each other principally in sex and age. The distinction of sex is the more important of the two. It separates the children into two classes. Subdivisions are then effected by age. The distinction between seniors and juniors is acknowledged. The eldest, or senior, is the head of the family. The senior has only juniors beneath himself, and the youngest junior only seniors above him. The senior brother and sister being considered the more important and influential members of the family, and of society at large, the terms which express seniority are preserved more carefully than those which are assigned to juniors. The amalgamation of age with the expressions of consanguinity is fatal to the adoption of abstract terms equivalent to brother and sister. The irresistible influence which time exercises on everything prejudices the application of terms which include age in their definition.

Even the genderless terms of consanguinity just mentioned cannot be considered to express fully the abstract sense of consanguinity. For a stricter examination will disclose the fact that they do not describe the affinity of brother and sister in the sense in which it is generally used, as children of the same father and mother, but that they are only applicable to children of the same mother. The Mandengo, Turkish, and Dravidian terms prove this distinctly; they denote a male or female who is born from the same mother—expressions synonymous with the Sanskrit *Sahodara* (Sodara) and *Sagarbha*.

A strangely intricate system of nomenclature arises in many concrete languages from the separation of children according to sex. The relationship existing between brothers and brothers on the one, and sisters and sisters on the other side, is the same. An elder brother is exactly in the same manner related to his younger brother as an elder sister is to her younger sister, and *vice versa*. The identical genderless terms of consanguinity apply, therefore, to elder brothers and sisters, as well as to younger brothers and sisters. The expression becomes complete when the several determinatives, male or female, have been added. In some languages, as we have already observed, the sound of the word is modulated, in order to convey the necessary distinction. In the Yoruba language "elder consanguinity" is expressed by *egmo*, and "younger consanguinity" by *aburo*; "male" is *okuri*,

and "female" *obiri*; *egmo okuri* is therefore "elder brother," *egmo obiri* "elder sister," *aburo okiri* "younger brother," and *aburo obiri* "younger sister."

So long as persons of the same sex address each other no difficulty arises, but immediately an individual oversteps this sexual barrier, *e.g.*, a brother speaks to his sister, the case is altered. The principle followed in this proceeding shows that persons of the same sex, when addressing each other, use identical expressions, but that heterogeneous persons use, in this case, dissimilar words. A Hawaiian man, *e.g.*, calls his elder brother *Kai kua ana*, his elder sister *Kai ku vahina*, his younger brother *Kai kaina*, and his younger sister *Kai kai vahina*; but a Hawaiian woman calls the same persons respectively *Kai ku na na*, *Kai ku a ana*, *Kai ku nānā*, and *Kai kai na*.

This difference in the speech of men and women, however significant, is by natural causes limited within a narrow compass. If men and women really spoke different languages, the very aim for which speech exists, clear communication of ideas, would be frustrated. The circumstance that in Sanskrit dramas men speak Sanskrit, and women Prākṛit, is not to the point. The so-called language of the Kaffir women, which is known as the *Uku Hlonipa*, has a totally different origin, and supplies a special want, but it is altogether at variance with the above-mentioned expressions used in certain languages by men or women, when speaking to each other. The *Uku Hlonipa* arises from the repugnance which Kaffir women have to mention the name of their fathers or fathers-in-law, or any word which resembles such names. In its tendency it reminds one of the custom of *tabu*, prevalent among the South Sea Islanders, though the anxious avoidance of the names of the king and of members of the reigning family, and of all words resembling them, is not confined to one sex, but shared by men and women alike.

The terms of kinship hitherto considered excluded sex, but there exist some concrete languages which include it. These latter formations indicate undoubtedly a progress. If sex alone, besides relationship, were expressed, such words would have assumed an abstract appearance. The circumstance of their still retaining age proclaims their concrete nature.

Rank and position are closely connected with, and inseparable from, seniority. The eldest brother is, in the absence of another elder member of the family, *eo ipso* its head. The eldest sister enjoys a similar distinguished position, especially where the laws of inheritance favour the female line. The precedence granted to seniors lowers the position of juniors. Even language does not treat both with the same regard. While distinct terms are

conceded to the elders, the juniors of both sexes have either only one name in common, or when they enjoy the privilege of having special terms assigned to them, these terms themselves bear often the impression of a later origin. Thus, the Tamil word for "younger brother," *Tambi*, is composed of the possessive pronoun *tam*, and the adjective *pin*, "after," and stands for *pin pirandavan*, "he that is born afterwards." Separate terms for "elder brother" and "elder sister," together with common ones for "younger brother" and "younger sister," occur in many Asiatic, American, and Australian dialects.

Four distinct terms for these four classes of kinship, *i.e.*, one special for each, are found in the languages of the Chinese, Turks, Dravidians, Hungarians, &c.; *e.g.*, in Chinese "elder brother" is *heung*; "elder sister," *tsze*; "younger brother," *te*; "younger sister," *mei*. In Chagatai the same are *Aga*, *bazy*, *iny*, and *singil*; in Telugu, *anna*, *akka*, *tammudu*, and *cellelu*; and in Hungarian, *ba* (*bacy*), *nene*, *ocs*, and *hug*.

To express in such a language the relationship of "brother" and "sister," both terms must be joined; *e.g.*, in Chinese, "brother" is *heung-te*, and "sister" *tsze-mei*; and in Telugu, *anna-tammudu* is "brother," and *akka-cellelu* "sister."

We therefore distinguish between two different kinds of concrete languages. The first contains special words used in case persons of different sex address each other; the second does not possess such peculiar terms, and males and females use, when conversing with each other, the same words as if they were speaking with persons belonging to their own sex. We call the first division *heterologous*, because heterogeneous persons use different words, or speech; and the second *homologous*, because they use, in this case, the same words or speech.

Each division is again subdivided into three classes, as follows:—(1) the first class marks the difference existing between elder and younger consanguinity by adopting special terms for each, and the difference of sex by adding either the words "male" and "female," or by modulation of sound; (2) the second possesses special terms for elder brother and elder sister, but one in common for younger brother and younger sister; (3) the third has four distinct terms for each of these varieties of kinship.

These are the principal varieties in which concrete languages express the relationship between brothers and sisters. They represent approximately the different stages of development of thought which can be observed in the growth of the respective languages. The principle of concretion remains everywhere intact and distinct, but it appears in various phases of refinement, corresponding to the mental capabilities of men. How

this progress originates, how it grows, and where and why it stops, are questions difficult or impossible to be answered.

Having thus laid stress upon the important position which terms of kinship occupy in a language, it must be further proved that their construction is a manifestation of the general character of a dialect, and that the innate inclination re-appears again in different forms of speech.

Next to the words of relationship, the pronouns, as the substitutes of nouns, have preserved most distinctly the original germs of a dialect. In some languages the terms of kinship are retained in conversation, where others would use in their stead pronouns. The fact is one of the many indications which show that both nouns and pronouns are constituted alike in many respects. The connection existing between both manifests itself in various ways. The words for "father" and "mother" differ in the Zulu language according to the pronoun with which they are associated. West Australian languages combine also in a peculiar manner pronouns with terms of kinship and of relationship. In the American languages the terms of relationship, the names of the various members and organs of the body, and other objects which have a personal bearing, are always connected with pronouns.

The employment of real abstract pronouns testifies to a high development, and their existence must be considered as marking an essential progress in the mental life of a language.

The pronouns of the first and second persons have as their starting-point a firm concrete basis; it is either the *I* who speaks, or the *thou* who is addressed. Words which express the respective position of the two first pronouns are therefore used in preference to others. Reverential terms towards superiors equal terms towards equals, and condescending terms towards inferiors, are the natural outcome of such a system. The Javanese dialect possesses thus twenty pronouns of the first and twelve of the second person.

The pronoun of the third person is a truer reflection of the character of a dialect, than either that of the first or the second person. The pronoun of the third person is an artificial *alter ego*. It originates from an inmost tendency towards abstractness. Where such an inclination is wanting it does not exist as in the Javanese.

As in concrete languages there do not exist any abstract terms for brother and sister, so also do they not possess an abstract term for the pronoun *we*, which is found in the abstract languages. The concrete languages acknowledge the differences in the pronoun *we*, by special expressions. Strictly speaking there are two separate kinds of "we." It either includes the

speaker and the party addressed, or excludes the party addressed and includes that spoken of. "We two" is either "Thou and I" or "He and I"; the plural "we" signifies in the same manner "You and I" and "They and I." Every language which contains such inclusive and exclusive terms of "we" indicates by their presence its concrete tendency. The Hottentot idioms are rich in such distinctions; this fact is a sure sign of the Hottentot dialects belonging to the concrete and not to the abstract class, which includes Egyptian and Hebrew. These peculiar pronominal expressions are found to this day in Asia in the Mandchu, Bahing, Gujarati, and the Dravidian languages; in Africa in the Hottentot dialect, and in the neighbouring Madagassy; it occurs in the Malayan and Polynesian tongues, and is a well-known expression in the American languages.

The concrete character of a language can be recognised in many expressions of daily life. The natural properties displayed by individual persons or objects, the characteristic discrepancies apparent in similar actions or conditions, are keenly grasped and appreciated by the unsophisticated child of nature; but the common bond which links together the kindred members to the parent body is, if not overlooked, at all events not appreciated. The individual overshadows the species. Each single object impresses the mind of the beholder at first with its individuality. If this impression becomes overpowerful the mind can no more distinguish between the kindred and the kind, and this difference is in consequence not expressed in speech. There exist tribes, as has been quoted before, who, while giving a separate name to all the animals they know, do not possess a term for animal; others describe the tails of all animals by special words, yet do not know how to express "tail"; others point out each separate plant or tree by an appropriate name, and are unable to speak in general of a plant or a tree; or they will distinctly define each bird, fish, leaf, or stone, or any other existing thing, but as their abstracting powers are deficient, do not understand how to name a bird or a fish, a leaf or a stone.

The Bisaya dialect does not exhibit any verbs which correspond to the abstract sense of the English "to go," "to open," "to gather," and "to buy," but it produces 33, 27, 42, and 13 special terms, all expressing a particular going, opening, gathering, or buying. In the Tagala language, "to go" is expressed in seventy-five different ways, and "food" is boiled in eleven, while it is eaten in the Bisaya dialect in forty different ways. Like the Burmese, so the American Cherokee delights in manifold modes of washing; while the Mohican and the Burmese descant

on the varieties of cutting. Languages so different as Hawaiian and the Dravidian dialects are at a loss how to express the verb "to break."

Such combinations as *to-sav* ("much-little"), as equivalent to quantity, and *chung-king* ("heavy-light"), as equivalent to weight, in Chinese, prove that the formation of *teze-mei* ("elder and younger sister") for "sister," does not stand alone in Chinese. Many more examples from various languages could be produced if the proof contained in these will admit of any doubt respecting the innate concrete tendency of the individual reappearing in his speech.

The ideas which language expresses are defined by gender, number, space, time, and other qualifying attributes. These attributes are found everywhere, and are everywhere the same. They existed previously to that period when man could testify to their presence by alluding to them in speech. For the individual man belongs himself to a sex; he is one of his species, and lives at a certain place during a limited time. These categories never change; but how does language deal with them? This is the question now before us; our intention, therefore, must be directed to observe how a language deals with gender, how it expresses number, denotes space and time, and all the other modalities connected with the ever-changing variations of mind and matter.

The most striking feature which is impressed on our mind, when we look about and regard the various objects around us, is no doubt the fact that they are either endowed with life or not. We all know that imperfect knowledge may falsely ascribe life to inanimate matter, or ignore life in animate creation; but these mistakes only prove ignorance, while they manifest the inclination to constitute vitality as the principal criterion. It affects our senses with all the strength of a concrete substance: for as such appears life. If the existence of life is once admitted as the characteristic mark of distinction, a further subdivision is attempted by separating animate beings, who are credited with possessing the faculty of reasoning, from those who are supposed to be deprived of it. Man, as the representative of mankind, even to the detriment of woman, generally takes upon himself the arrangement of this vexed question. Where knowledge forsakes him conceit helps him. The complete classification into animates and inanimates, and of the former into rationals and irrationals, is occasionally lost sight of, and its place is taken by distributions which acknowledge either only rationals, irrationals, and inanimates, or which, ignoring any difference between the latter two, distinguish simply between rational and irrational beings.

A closer observation devoted to the creatures around us soon discovers the diversity of sex which pervades the whole creation. The existence of sex is no less a reality than is the presence of life; but if the former is accepted as the starting-point of a methodical system, wherein to arrange living beings, inanimate objects, and abstract ideas, it is soon obliged to have recourse to imagination.

The admission of gender, the grammatical representative of sex, as a standard of classification, is evidence of an imaginative turn of thought. It requires the personification of inanimate beings. Imagination endows them with artificial life, assigning to them a gender, as if they were living creatures.

A language marks the varieties of gender when the words, more especially the nouns, contain in themselves the distinction of sex without expressing it by peculiar terminations, additions, or modifications of sound; *e.g.*, in English "man" and "bull" are masculine, and "woman" and "cow" are feminine, but the external form does not betray their respective gender. Of course every language can express the difference of sex, as sex is a natural fact, and a language is nothing if not descriptive; but if a dialect must have recourse to the expedient of adding such terms as "male" and "female," or others which convey the same meaning, it is clear that such a language has not what has been defined as gender. Though *man* is a male, and *woman* a female by sex, grammatically they may be neither masculine nor feminine; *e.g.*, according to Telugu grammar neither *magadu* ("man") nor *eddu* ("ox") is masculine, nor *ālu* ("wife") and *āru* ("cow") feminine.

The addition of terms like "male" or "female" does not affect the gender of any particular word. It only qualifies the noun, as do all adjectives. The gender of the word "child" remains the same whether it is connected with male or female, small or big, white or black, &c.

All classifications, however well they are conceived, and however logically they are applied, encounter obstacles, when they are consistently practised. This is a natural defect of all systems. In the first division, which constitutes life and reasoning power, as the salient points, these two (life and reasoning power) are not always easily discovered, and the unbiassed recognition of gender, in creatures, objects, and thought, is in the second division also occasionally impeded by flights of imagination, or by want of knowledge. But the most important distinction between the two systems must be considered to be the fact, that the first mentioned is adopted by concrete, the second by abstract languages. This choice is retrospectively a sufficient indication of the prevalent tendency in each classification.

The great majority of languages being concrete, the abstract minority only expresses gender.

The well-known African linguist, the lamented Dr. W. H. T. Bleek, is, so far as my knowledge goes, the first among modern philologists who became aware of the important position which gender occupies in language, and who pointed it out in his excellent essays. Dr. Bleek, being struck with the very interesting but puzzling system of concords occurring in South African languages, says that, "when we inquire into the probable etymologies of the Hottentot derivative suffixes of nouns, not one of them seems to have originally any meaning implying sex."

If we now return to the classification from which we started, we shall see that the South African, the great bulk of the American, and some Asiatic languages acknowledge a classification founded on the difference between animate and inanimate creatures; while some other concrete tongues, as Hungarian and the Dravidian dialects, prefer a division between rationals and irrationals. In the Telugu and Tamil grammars the latter go by the name of majors, or high-caste words, and of minor, or low-caste words.

The great difference which exists between gender-denoting and gender-ignoring languages becomes manifest from the manner in which gender is recognised. In gender-denoting languages gender need not be always distinctly expressed, and yet its presence is felt and pervades the whole grammatical system. Gender-ignoring dialects may, on the contrary, apparently possess special forms expressive of sex and be quite devoid of appreciating gender in a grammatical sense, a possibility to which we have alluded previously.

We distinguish in nature especially two sexes, a male and a female; but as there are objects which cannot be properly ascribed either to the one or to the other class, the existence of a neuter class is sometimes deemed emergent. Abstract languages recognise, consequently, either two or three grammatical genders. The introduction of gender into a language is accompanied both by peculiar advantages and disadvantages. Its superiority lies in its requiring a higher mental discernment, in its appealing to imagination; its defect arises from the difficulties which beset the faculty of judgment. Whether a language admits two, or whether it admits three genders, the difficulty is how to dispose of inanimate objects and abstract thoughts. In the digeneous system they must be enrolled either in the masculine or the feminine class; in the trigeneous system the freaks of imagination interfere with a strictly logical arrangement.

The pronoun of the third person is the most positive evidence

for the character of a language, so far as it concerns the question whether a dialect ignores or denotes gender. In the former case the pronoun does not express gender; in the latter two or three forms are required, according as the idiom recognises two or three distinct genders. The third personal pronoun is *de facto* the abstract representative of the various persons and objects; it describes their principal qualities by imparting to them in gender-denoting languages a certain sex. The superiority of the trigeneous system over the digeneous is not only one in theory but also one in practice.

The mode in which languages express plurality, though not so important a feature as gender in the development of a dialect, still attracts a great deal of interest.

I have discoursed on this subject to a great extent in another place,¹ and though the evidence is interesting, and corroborates the conclusions already obtained, I need not enter now into any further details.

The classification of languages which I propose will be as follows:—According to psychological or mental characteristics all languages are arranged in two great divisions—a concrete and an abstract; both divisions are to be subdivided into two classes—the concrete division into the heterologous and homologous; the abstract into the digeneous and trigeneous. Both the heterologous and homologous classes contain three sub-classes, according to the different modes of expressing consanguinity.

If we represent concrete and abstract languages by *C* and *A* respectively, their classes by α and β , and the groups by 1, 2, and 3, we obtain the following symbols:— Ca^1 , Ca^2 , Ca^3 ; $C\beta^1$, $C\beta^2$, $C\beta^3$; $A\alpha$ and $A\beta$.

To Ca^1 belong (a) such American languages as the Dakota, Salith, and Eskimo dialects; (b) the Polynesian languages, as Hawaiian, Tahitian, Tongan, Fijian, Maori, Malagasy, &c.; (c) many Australian; and (d) the Basque languages.

Ca^2 includes some American and Basque languages.

$C\beta^1$ contains the Malayan, many African and Asiatic languages.

$C\beta^2$ is represented by the Mongolian and Tungusian languages.

$C\beta^3$ includes Chinese, Japanese, the Finnish, Turkish, Dravidian, and other languages.

$A\alpha$ is represented by Old Egyptian, Coptic, the Berber, and the Semitic languages.

$A\beta$ contains the Aryan languages.

¹ A second edition of my work, "On the Classification of Languages," is in preparation.

SCHEME OF THE SYSTEM OF CLASSIFICATION.

Physiological (<i>vocal</i>) Characteristics.	Psychological (<i>mental</i>) Characteristics.							
	Concrete (<i>c</i>).						Abstract (<i>a</i>).	
	Heterologous (<i>a</i>).			Homologous (<i>β</i>).			Digeneous (<i>a</i>).	Trigeneous (<i>β</i>).
	1.	2.	3.	1.	2.	3.		
I. (Monosyllabic)	a. Corean. b. Transgangetic. c. Kiranti. d. Tibetan.	..	Chinese? ..	Old Egyptian.	..
II. (Incorporative) ..	a. Many American languages. b. Basque languages.	Algonquin	..	..	..	..	..	..
III. (Euphonic)	Mandengo, Yoruba, &c.	..	..	..	..
IV. (Euphonic inflectional).	Hausa	..
V. (Alliteral)..	Congo, Angola (Kafir) &c.	..	..	..	..
VI. (Agglutinative) ..	a. Polynesian. b. Australian languages.	Narrinyeri	..	Malayan languages.	Tungusian, Mongolian languages.	Japanese, Finnish, Turkish, Ancient Gaulian, Dravidian, &c.	..	..
VII. (Agglutinative inflectional).	Hindustani, Bengali, Singhalese.
VIII. (Dissyllabic inflectional).	Semitic languages.	..
IX. (Inflectional synthetic).	Sanskrit, Zend, Old Greek, Latin, &c.
X. (Inflectional analytical).	Italian, Modern German, English, &c.

Explanation—Ca¹ II. is the symbol for many American as well as for the Basque languages.

Ca¹ VI. is the symbol for Polynesian and many Australian languages.

Ca² II. is the symbol for the American Algonquin, &c.

Ca² VI. " " " " Australian Narrinyeri, &c.

Cβ¹ I. " " " " Corean, Transgangetic, Tibetan.

Cβ¹ III. " " " " Mandengo, Yoruba, &c.

Cβ¹ V. " " " " Congo, Angola, &c.

Cβ¹ VI. " " " " Malayan.

Cβ² VI. " " " " Tungusian, Mongolian, &c.

Explanation—Cβ³ I. is the symbol for the Chinese.

Cβ³ VI. " " " Japanese, Finnish, Turkish, Dravidian.

Aα I. " " " Old Egyptian.

Aα IV. " " " Hausa.

Aα VIII. " " " Semitic languages.

Aβ VII. " " " Hindustani, Bengali, Singhalese.

Aβ IX. " " " Sanskrit, Zend, Ancient Greek, Latin, &c.

Aβ X. " " " Italian, Modern German, English, &c.

This psychological classification, which is based on the peculiar action of that part of the brain where the thoughts are woven together, must be supplemented by the physiological classification which originates in that part of the brain which produces the sound and which employs the vocal peculiarities as a criterion of arrangement.

I believe it is necessary to enlarge the system of the vocal or external classification. More certain information is required to decide the question of the external development of languages. I restrict myself in mentioning a few prominent, well-known characteristics, in order to illustrate the system proposed here, representing the terms indicative of the psychological construction by Roman figures: thus, monosyllabic languages will be represented by I; incorporative by II; euphonic (North African Negro) by III; euphonic inflectional by IV; alliteral (South African) by V; agglutinative by VI; agglutinative inflectional by VII; dissyllabic inflectional by VIII; inflectional synthetical by IX; inflectional analytical by X.

This scheme is only provisional, as it is by no means complete. Many languages have not been described, but it will be possible, after sufficient information, to assign a proper place to each language. I have collated more than one thousand languages, none of which exhibited any signs contrary to the classification proposed. It is, besides, a memorable fact that though this classification was originally derived from a strictly philological base, it coincides totally with ethnology.

The result at which I hope to have arrived may be briefly summed up as follows:—

In order to assign to a language its proper place in the realm of speech, both its psychological or *mental* and its physiological or *vocal* characteristics must be well studied, combined, and if possible described in a scientific formula.

All languages must, according as the psychological propensity towards specialising and generalising prevails, be divided into two classes, which we have called concrete and abstract. Difference in mental disposition determines difference of origin. We know of no concrete language which can be regarded as related to a primitive abstract language, or to have developed into an abstract idiom, unless through the introduction of a foreign abstract element, which introduction produces an entire change. A transition from concrete to abstract, though possible according to the laws of nature, cannot be actually pointed out, and the distinction may therefore be considered to be a fixed one to all intents and purposes. This assertion does not exclude the fact that one language may be in one subdivision, and another in another subdivision of the same class, and yet both may be

originally related to each other. In like manner there exist different varieties in the same species, and varieties which seem to be a connecting link between two species in the several kingdoms of nature.

The concrete class ignores totally the distinctions founded on gender, while gender is the keystone to the abstract system.

Both classes admit of subdivisions, and in the concrete, as well as in the abstract classes, the peculiar formation of the terms of kinship is provisionally chosen as the principal criterion.

The physiological disposition, as manifested in the external or vocal formation, combined with the material mode of thinking manifested by a language, betrays fully the peculiar character of an idiom, as is exemplified in the scheme of the system of classification.

DISCUSSION.

MR. KEANE commented on the many difficulties presented by Professor Oppert's scheme. The primary aim of all classifications, he conceived, was to group together all individuals assumed to be genetically connected. But according to this plan, languages such as Latin, Italian, and French, known to be so connected, would have to be divorced from each other, and placed in separate groups. Italian and French had recast the Latin gender system, fusing the neuter in the masculine, just as English had altogether revolutionised the original gender principle of the Aryan family. This might reasonably be urged as a strong argument against any classification based on considerations of grammatical gender. It could certainly be no reason for separating English, French, or Italian from the Aryan family, to which they undoubtedly belonged. A method requiring such a severance at once exposed itself to this fatal objection, and instead of order, seemed to introduce nothing but confusion and chaos. It was admitted that grammatical gender was the exclusive prerogative of three linguistic groups, the Aryan, Semitic, and Hamitic, which may have sprung from a common centre, but which, notwithstanding this common principle, had not yet been shown to flow from one primeval stock. How much more hopeless must be the task to class all other languages in one category on the negative ground of the absence of grammatical gender. Abstract and concrete, gender and no gender, rational and irrational, animate and inanimate, inclusive and exclusive pronouns, analysis and synthesis, and the like, could no more afford any solid basis of linguistic classification, than the hunting, pastoral or agricultural states, common anthropomorphic ideas, similarity of stone implements, and the like could afford any solid basis of ethnical classification. All these points of resemblance might fairly be adduced in support of monogenistic views, but could not be relied upon to determine the mutual relations of subsequently evolved

physical and linguistic varieties. The attempt to show any necessary connection between physical and linguistic groups must also be abandoned once for all. Long lists might be drawn up both of peoples who, like the Bulgarians, Hazarahs, Aimaks, Sakalavas, Betsimisarakas, are known to have changed their original speech, and of others who, like the Magyars, Osmanli, Karelian, and other Finns, have through intermixture changed their original type while preserving their original speech. It is also evident that within the same anthropological group, as within the Caucasian, two or more radically distinct linguistic groups have often been developed. It follows, as Professor Sayce has already pointed out, that "philology and ethnology are not convertible terms."¹ In the ethnological Appendix to his "Asia" (p. 695), Mr. Keane had dealt with this problem of specific diversity of speech within the same physical branch of mankind. But it was surprising to find how little attention had hitherto been paid to the subject, a right understanding of which lay nevertheless at the root of so many ethnological difficulties and seeming contradictions. When we once came to see that physical and linguistic evolution proceeded on different, and often on divergent lines, we should cease to wonder at these discrepancies, which, from the very nature of the case, were in fact inevitable. Meantime, in all attempts at linguistic classification Mr. Keane considered that nothing was to be gained by departing from the old lines as laid down by W. Von Humboldt, who had classed all languages in four great orders based upon morphological considerations. But the mistake made by Dr. Oppert, in common with some other recent innovators, seemed to be that he supposed these orders—the isolating, agglutinating, polysynthetic, and inflecting—to be so many family groups, as it were, and of course from this point of view nothing could be easier than to upset the arrangement. No sane philologist, however, for a moment supposed that because two idioms belonged, say, to the agglutinating or to the inflecting order, they must therefore be mutually related. These orders were like the great divisions of the animal and vegetable kingdoms, within each of which were contained many genera and species, not otherwise necessarily related to each other. They were so many phases of upward development, through which all speech tended to pass, just as in zoology we pass in natural stages from the fishes through the reptilia to the avifauna on the one hand, and to the mammalia on the other. But as the linguistic is much more rapid than biological evolution, cases might occur in which languages had passed through two if not more of these orders, even within the historic period. Thus we find that several neo-Teutonic languages, notably English, and most neo-Latin languages, such as Italian and French, have broken away from the inflecting or synthetic state, and have reverted almost to the earlier isolating or analytical condition of speech. It is a mistake, however, to suppose that they have reached a purely analytical state, for the Romance verb, for

¹ "Science and Language," vol. ii, p. 317.

instance, is still largely synthetical—in some cases more so even than Latin itself. Compare, for example, the Italian *parlai, parlasti, parlò*, with the Latin *loquutus sum, loquutus es, loquutus est*, and *amatevi* with *amamini*, that is, *amamini estis*, a purely participial and analytical form. But even had they made greater strides towards analysis, these languages could not on that ground be separated from the older and more synthetic Italic and Teutonic prototypes, from which they are historically known to have undoubtedly descended. All this merely goes to show that even the morphology of speech is far less persistent than that of biological species. Hence, within the four morphological orders, which in any case merge imperceptibly one into the other, there may be comprised groups or genera in which the agglutinating, inflecting, and other stages are found overlapping each other at various points. Still the historic evidence of genetic descent can never be set aside, and the Holderness dialect of Yorkshire, for instance, which has scarcely retained half-a-dozen grammatical inflections, is as certainly a member of the Aryan linguistic family as are Sanskrit, Greek, or any other highly inflecting Indo-European tongues. A system of classification which tends to disturb these recognised relations cannot be regarded as satisfactory, and, as already remarked, can ultimately lead to nothing but chaos.

Mr. A. TYLOR expressed his admiration of the singularly clear manner in which the author had elucidated a most difficult question. He was especially struck with the remarkable exposition of the mode in which concrete and abstract expressions had arisen. It was most difficult to explain such matters to students, but on Dr. Oppert's plan it became an easy matter. Mr. Tylor was also pleased to find the author using the term *homologous* more in the strict sense of proportion, which it had borne for two thousand years, than was often the case with anatomists.

Dr. OPPERT, in reply, remarked that Mr. Keane did not seem to grasp the drift of his classification, even ignoring that he still retained, though in a limited application, such external differences as monosyllabic, agglutinative, inflectional, &c. To his (Dr. Oppert's) surprise Mr. Keane contended that such differences were never used in classifications, the contrary being too well known a fact to need remark. That Mr. Keane did not admit that there existed a difference between mother and daughter languages did not affect the real matter of fact. The objections propounded by Mr. Keane needed no reply, as they did not touch the foundation of his (Dr. Oppert's) classification, though, on the other hand, the author said he should be only too happy to listen to criticisms of his system, which was, he was well aware, as yet, far from perfect.

APRIL 10TH, 1883.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last ordinary meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

- From Professor SCHAAFFHAUSEN.—*Die Höhlen bei Steeten-an-der-Lahn.* By Konservator Oberst z. d. v. Cobausen.
- From the AUTHOR.—*Der Neue Höhlenfund von Steeten.* By Dr. Hermann Schaffhausen.
- From the SOCIETÀ ITALIANA DI ANTROPOLOGIA.—*Archivio per l'Antropologia e la Etnologia.*
- From the SOCIETÀ DI SCIENZE NATURALI ED ECONOMICHE DI PALERMO.—*Giornale di Scienze Naturali ed Economiche.* Vol. XV, 1882.
- From the SOCIETÀ GEOGRAFICA ITALIANA.—*Emigrazione Italiana all'Estero nel 1881.*
- *Acts du 3^e Congrès International de Geographie.* Vol. I.
- From the ACADEMY.—*Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen, Afd. Natuurkunde: Tweede Reeks, Deel XVII.*
- *Processen-Verbaal van de Gewone Vergaderingen der Koninklijke Akademie van Wetenschappen, Afdeling Natuurkunde.*
- *Jaarboek van de Koninklijke Akademie van Wetenschappen gevestigd te Amsterdam voor 1881.*
- *Atti della R. Accademia dei Lincei.* Vol. VII, Fas. 4.
- From the ASSOCIATION.—*Proceedings of the Geologists' Association.* Vol. VIII, No. 1, and Annual Report.
- *Transactions of the National Association for the Promotion of Social Science, 1882.*
- From the MUSEUM.—*Archivos do Museu Nacional do Rio de Janeiro.* Vols. IV, V.
- From the SOCIETY.—*Journal of the Asiatic Society of Bengal,* No. 251.
- *Proceedings of the Royal Society,* No. 223.
- *Journal of the Society of Arts.* Nos. 1582-1584.
- *Boletim da Sociedade de Geographia de Lisboa.* No. 7, 1882.
- From the EDITOR.—*Journal of Mental Science.* April, 1883.
- "Nature." Nos. 698-700.
- *Revue Politique.* Tom. XXXI, Nos. 11-13.
- *Revue Scientifique.* Tom. XXXI, Nos. 11-13.
- *Science.* Vol. I, No. 1.
- *Timehri.* Vol. I, Part 2, December, 1882.

The following paper was then read by the author:—

On the OSTEOLOGY of the ANCIENT INHABITANTS of the ORKNEY ISLANDS. By J. G. GARSON, M.D., Anat. Assist., Royal College of Surgeons of England; F.Z.S.; Memb. Anthropol. Inst.

(WITH PLATE I.)

IN the following remarks I propose to direct the attention of the Institute to the osteological characters of those of our ancestors who formerly inhabited the Orkney Islands. Though much has been written on the prehistoric archaeology of these islands, the physical anthropology of the early inhabitants is only known from short accounts, chiefly in the writings of Drs. Barnard Davis and Thurnam. The cause of this is, perhaps, not far to seek, since the osteological remains hitherto available for anthropological research have been very limited, though not so much on account of actual want of material as from its being scattered. Concentration of the osteological remains of all races in a few large museums, where such specimens are preserved and made available for scientific research and comparison, is very desirable. Single skulls, in the possession of private individuals or of small museums, are seldom of much use to any one, whereas collected together they are of the greatest use and scientific interest. The presentation of these to the larger anthropological museums is consequently much to be encouraged for the advancement of anthropology, and it is to be earnestly hoped, therefore, that every one who is able to assist us in this way will not lose an opportunity of doing so, especially those who possess well-authenticated skulls or skeletons of any of the ancient inhabitants of this country, or indeed of any race. Donors need not be afraid of their presentations being overlooked among the multitude of other skulls and skeletons in our larger museums, as I have often heard it expressed. It must be remembered that it is to these collections that anthropologists go when in search of information; consequently the specimens are more likely to be seen and used, while the catalogues, which usually not only record the history of the specimens, but also the munificence of the donor, are read and perused by many more who may not have the opportunity of examining the specimens.

The ancient inhabitants of the Orkneys are represented in the museum of the Royal College of Surgeons of England by one skeleton, more or less complete, and five skulls. In the museum of the University of Cambridge there are six skulls; in

the collection of the Society of Antiquaries of Scotland, at Edinburgh, there is one; and in the museum of the Philosophical Institute of Leeds there is another skull. To all of these there are well-recorded histories of the localities in which they were found, and of the objects which surrounded them. Through the kindness of Professor Humphrey, I have had an opportunity of examining the Orkney skulls at Cambridge, as well as those in the College of Surgeons' museum. The single skulls at Edinburgh and Leeds I have not measured, but their chief dimensions are recorded in the "*Crania Britannica*."

As much information is to be derived from studying the osteological remains in conjunction with the archaeology of the places in which they were found, I propose, before describing the specimens, to give a short history of these places, which were either places of abode or burial. Of the former there are the so-called Picts' houses, the most complete example of which is that of Skerrabrae, in Sandwick, which has been described and figured by the late Mr. George Petrie,¹ and was the subject of a second paper, containing the results of more recent excavations, by Dr. William Trail.² The buildings consist of a group of central chambers, arranged on both sides of a winding passage, into which they open. The most complete chamber is about 20 feet square. In the centre is the hearth, elevated a little above the floor; partitioned off by means of flagstones, set on edge, are small compartments arranged round the four walls; and on the floor are some stone cists, near one of which was found a very rude clay urn. The walls of the chamber are at present about 6 to 8 feet high. In each wall are openings which lead into small chambers, or cells; through one of these, which communicates by a doorway with the exterior, a drain passes outwards, and the opening seems to have been guarded. The openings into the central passage are two in number, one principal doorway and a second smaller one opening into one of the side chambers, which in turn opens into the central passage. The height of the main passage seems to have been 5 or 6 feet, judging from the portion where the roof is complete, and from 2 to 3 feet wide; at one part it widens out into a triangular corner; it also widens opposite some of the doorways of the chambers. From the fact that the jaw-bones of a large whale were found lying across the floor, one on each side of the hearth, it seems probable that the structure had been roofed. Four chambers, such as described, have been discovered and cleared out, but it seems probable that some others remain unexplored.

¹ "*Proc. Soc. of Antiq. of Scot.*," vol. vii, Part 1, p. 201 (1869).

² *Loc. cit.*, vol. viii, Part 2, p. 462 (1870).

There is some evidence of one of the chambers having been destroyed while the building was inhabited. In these dwelling-places great varieties of stone and bone relics, all of the rudest manufacture, have been found; amongst other things may be mentioned celts, which are rare in Orkney, and stone discs of various sizes; two circular stone balls, about the size of an apple, carved into a series of projecting conical points; bone chisels; pins; beads, at various stages of manufacture; bone cubes, or dice; various pieces of rude pottery, without any ornamentation; and lumps of unbaked clay. There were also found large stone mortars, which contained pounded bones and heaps, amounting to several bushels, lying near them. As indicative of the animals that existed, there were found the bones of sheep, pig, red deer, oxen, several large ox-bones, which Mr. Laing states¹ to be those of *Bos primigenius*, and the small straight bones of *Bos longifrons*; whales' teeth, and other bones, as well as those of dog and fish. Conspicuous by their absence were querns, whorls, the hand-comb, spears and arrows. No trace whatsoever has been found of any metals.

The human remains found in Skerrabrae consist of the skeleton 346A, a skull 346B, and a few other bones. The skeleton was found in the chamber described, near the fireplace, with the head to the north, the knees tucked up, and the arms folded; the head was the lowest part, and was about 3 feet above the floor. There were some other bones higher up in the sand than the body. As to the exact spot where the other skull and bones were found, I have not been able to ascertain; but Mr. Petrie states that "human bones were found in the triangular corner of the passage, along with bones of the ox, &c., and one of them, a femur, had been notched." Again, Mr. Laing mentions that "a fragment of a lower jaw and other human bones were found, with animals' teeth and bones, under the pavement in one of the chambers." The specimens were in the possession of the late Mr. Watt, who chiefly excavated the buildings, till his death, when they were thrown out of his valuable museum, and re-interred. "In the summer of 1879," says Dr. Charles Clouston, jun., by whom the specimens were presented to the College, "when in Orkney, I managed to find where they were, and got leave from the present Mr. Watt to have them dug up again. The place where both interments took place is dry and sandy, which, I suppose, accounts for their preservation." Such is the history of how these remains have been rescued and preserved for scientific investigation. The other skulls in the College of Surgeons' museum were found in stone cists in round barrows

¹ "Proc. Soc. of Antiq. of Scot.," vol. vii, Part 1, p. 56.

at Newbigging, Rendall, and Townhill, the first two of which have been fully described by Mr. G. Petrie.¹ The Newbigging cist, which was of a complex nature, measured 4 feet 6 inches long, by 3 feet 1 inch broad, and 2 feet 3 inches deep, and lay east and west. It contained two skeletons. The one of which 162 is the skull lay at the east end, on the right side, with the right hand supporting the right cheek, the left arm and hand lying across the chest; the lower limbs were flexed and drawn up. The second skeleton lay at the other end of the cist on the left side, with the lower extremities flexed, and the femur and leg-bones across those of the first skeleton, which showed that the second had been the last to be placed in the cist. It was, moreover, so huddled together as to indicate its having been buried some time previous to being placed in the cist, or having been dismembered before being deposited. A heap of ashes, on which were some of the bones, was likewise found in the cist. The other bones and the skull fell to pieces on being removed; some fragments of the latter were preserved and sent to Dr. Barnard Davis, who considered it was probably that of a man. There are no remains of this skeleton in existence now. Near the barrow in which these skeletons were found, a clay urn and a skull were accidentally discovered some years previously by some workmen, who at once re-interred the skull, but the urn was broken. No trace of the skull could be obtained by Mr. Petrie. The cist at Rendall measured about 5 feet long by 2 feet 3 inches broad and 2 feet 7 to 10 inches deep, and lay nearly north-west and south-east. It contained two skeletons, which Mr. Petrie tells us were remarkably like those he had previously found at Newbigging. At its north-west end was a skeleton which corresponded to No. 1 of the Newbigging cist, lying on the right side, with the right hand apparently placed under the right cheek, and the left arm and hand across the chest. The lower limbs were drawn up and flexed. The skull fell to pieces on being removed. At the other end lay a second skeleton, of which 164 is the skull, in a similar position on the left side; the arms, thigh, and leg-bones lay huddled together across and above the leg-bones of the first skeleton, and altogether it seemed as if it had been dismembered or crushed before interment. The bones were generally wasted, and crumbled down when exposed to the atmosphere; but Mr. Petrie says, "I was able to examine these sufficiently to ascertain that, while the upper part of the frame was broad and massive, the thigh and leg-bones were not of corresponding size." A second cist, measuring 3 feet long, 1 foot 10 inches wide, and 3 feet deep, was found a few feet distant

¹ *Loc. cit.*

from the first, in which was a partially burnt skeleton, of which 165 is the cranium. The Townhill cist, in which skull 163 was found by Mr. Petrie in 1859, is described in the "*Thesaurus Craniorum*" as a short-flagged cist; but I have not been able to discover its dimensions, or further information regarding it.

Of the other skulls to be described, one was obtained in a cist in the parish of Harray, which measured 2 feet 10 inches long, by 2 feet 6 inches wide, and the same in depth; one from the Burg of Quoyness, in Sanday, regarding which I have not been able to ascertain any further history than the inscription upon it by Dr. Thurnam already given; and six were unearthed from the Knowe of Saverough, of which it will be necessary to give a brief description. This tumulus was opened in 1861 or 1862 by the late Mr. Farrar, M.P., by whom an account of its exploration has been published.¹ It is situated only a few feet above the seashore, and measures roughly 168 feet in diameter, by 14 to 16 feet in height. Its shape is liable to vary, from the shifting of the sand of which it is entirely composed. All the bodies were found in stone cists, which in many instances were broken. These appear to have been constructed on the surface of the ground, and to have been covered over with sand. The heads of the skeletons faced the north-west, except two which were turned to the north. At that time the remains of twelve or thirteen persons were found, and in several instances the skeletons were more or less complete, and in good condition; of these all that I know of are four skulls in the museum at Cambridge, one at Edinburgh, and one at Leeds. What has become of the other parts of the skeletons I am unable to say. That these should not have been as carefully preserved as the skulls is exceedingly unfortunate, as they would have been invaluable, if only for determining the sex of some of the skulls. Beside the skull now in Edinburgh was found an urn of baked clay; except this no relic was found with any of the skeletons, but in a cist by itself was found a bell. I may mention that no trace of the custom of burning the dead, so common in round-barrow cists, was found here. A little distance from the cists, within the tumulus, the remains of an old building were discovered in a very ruined state, which Mr. Farrar recognised to be a "*Broch*," or burg, another kind of ancient dwelling found in Orkney, which is thought by some authorities to have been contemporary with the "*Picts' Houses*," but which others consider to belong to a later period. In this burg were found an ancient "*comb*," some whales' bones, bone pins, querns, and "*a deer's-horn handle of some instrument, which retained yet the marks of iron tacks or nails.*"² In 1866

¹ "*Gentleman's Magazine*" (1862), Part 2, New Series, vol. xiii, p. 6C1.

² *Loc. cit.*

Mr. Farrar further explored the mound, and discovered a well-built wall, enclosing what appeared to have been a flagged court, an oblong stone like a ship's block, a bone pin, fragments of deers' horn, and a portion of a human skull. Outside the wall was the burg midden.

In order to determine, if possible, a little more accurately the history of this burg and the skeletons, we must compare it with other buildings of a similar kind. At Oxtro, which is about a mile from Saverough, some cists, containing urns filled with ashes and burnt bones, were found by Mr. Leask in deep-ploughing and levelling what appeared to be a natural hillock. They were the ordinary cists of the bronze period, and in some instances contained bronze ornaments. Below the cists, which were about 3 feet from the surface of the soil, traces of masonry were found, and on clearing away the rubbish to the foundation a complete circular burg, about 60 feet in diameter, was disclosed. This has now been thoroughly explored, and consists of two massive concentric walls, which in their present condition are about 6 feet in height. The inner wall encloses a large circular central chamber, from which there are doorways leading into smaller chambers, the external sides of which are formed by the outer wall. The cists and bronze articles were confined entirely to the strata above the burg, in which were found only deers' horns, bone and stone relics, &c. At Monkerhouse, near Stromness, Messrs. Laing and Petrie discovered the remains of a burg, about half of which has been carried away by the wasting of the coast-line. On the mound formed by the ruins of the burg an ancient chapel and cemetery have been placed. In digging in the cemetery quantities of bones and teeth have been turned up from the midden of the burg, and a rude hand-comb. In the outskirts of the midden, at about 3 or 4 feet below the present surface, cists between 5 and 6 feet in length are found, containing extended skeletons, the bones of which have been noticed to be very old, and the skulls very thick. The level of these cists corresponds to the foundations of the burg and is distinctly below that of the old chapel and cemetery. From these two burgs we learn important facts bearing upon the history of Saverough. We learn that burgs evidently existed long before the bronze period, since at Oxtro sufficient time had elapsed for the ruins of the burg to become covered over with several feet of soil before the inhabitants of the bronze period buried there. We learn from Monkerhouse that it was the custom, apparently, of the inhabitants of the burg to bury their dead in cists near the burg. This, I think, was very likely practised at Saverough, a conjecture which is strengthened by the relation of the cists to the burg found by Mr. Laing to

exist at Keiss, in Caithness, though it would be very desirable to procure, if possible, some skulls from the burg cists at Monkerhouse, for comparison with those from Saverough. I therefore do not agree with Mr. Farrar in his conjecture that Saverough "may have been used as a place of burial by some of the tribes inhabiting the islands long after it became a ruin." Both the probable history of the burg and the character of some of the human remains appear to me to be against its being a burial-place only of the comparatively recent date Mr. Farrar would lead us to suppose. That the mound has been used as a burial-place at different periods there is clear evidence from some of the skulls obtained from it. I agree, however, with Mr. Farrar as to the bell found in it having been placed there at a comparatively very recent date.

We have now to consider the physical characters, as indicated by the osteological remains before us.

Stature.

The datum we possess is, unfortunately, quite insufficient for establishing any accurate ideas as to the height of the ancient Orcadians. The only indication which I have been able to obtain is from the measurement of the skeleton from Skerrabrae, that of a woman, which, when articulated, measures 1.590 m. in height. This appears, from the most trustworthy results I have been able to obtain, to be about the mean height of the present existing English race of females. Professor Bowditch found that the height of young women between eighteen and nineteen years of age in Boston, U.S.A., was 62 inches = 1.575 m. Quételet gives 1.580 m. as the mean height of 300 Belgian women; while Krause¹ states that he found the average height of well-developed North German women between the ages of twenty and forty years to be 1.620 m. General Pitt Rivers found the average height of seventeen women whom he measured at Flamborough to be 5 feet 4 inches = 1.625 m. Probably, then, if we take 1.600 m. as the mean height of European women, we will be very nearly correct, the variations above and below this figure being exactly equal. The height of the skeleton before us, estimated from the lengths of the lower limbs, agrees very nearly with that of the articulated skeleton. Professor Humphrey has shown that the length of the femur, in proportion to the height of the body, is as 275 to 1,000.² The length of the femur being in this skeleton 442 mm., by this proportion the height of the body

¹ Krause, "Handbuch der Anatomie," 3te Aufl. (1879), Bd. ii, S. 9.

² Humphrey, "Treatise on the Human Skeleton" (1858), p. 108.

would be 1·607 m. Calculated from the length of the femur and tibia, according to Rolleston's method,¹ the estimated height would be 1·602 m. It is unfortunate that although several skeletons have been found, as we have learned from the histories of the excavations, none of these, or even of the long bones (from which the height could have been fairly accurately ascertained), have been preserved in at least any of our well-known anthropological collections. I may here observe that it is of the utmost importance to secure all the bones that can be got of these ancient inhabitants of Great Britain, whether in the Orkney Islands or elsewhere. The time is soon coming when all their osteological remains will be unprocurable. The history of other races that have become extinct without our having secured an adequate number of their skulls and skeletons, from which to study their osteological characters, should be a lesson to us in respect of those who have once inhabited our own country. Broca has very aptly said, "Pour les races peu connues, à défaut d'un squelette complet, tout fragment de squelette est une acquisition précieuse."² All the bones are of importance, I repeat, and would specially impress this upon antiquarians and those who are engaged in carrying on excavations in old barrows and other places where human remains are found. Many valuable skeletons are lost by the bones being very fragile and falling to pieces on being handled. These may, in most instances, be preserved by taking the simple precaution of melting a piece of spermaceti, and painting them over with it while still *in situ*. Should spermaceti not be at hand, a piece of paraffin, or composite candle, melted down and painted over the bones, will answer as well.

The Skull.

When the six skulls which I exhibit are placed on the table side by side, they can readily be separated into two groups, Nos. 346A, 346B, 163, and 165 forming one group, and Nos. 162 and 164 the other. The skulls at Cambridge likewise are divisible into two groups, Nos. 325, 326, 327, and 329 correspond to the first, while Nos. 322 and 330 correspond to the latter group; 323 (which seems to have been lost from the Cambridge collection), the skull at Leeds, and that at Edinburgh, belong, likewise, to this second group. These two groups are distinguished from one another by the skulls belonging to the first being longer antero-posteriorly in proportion to their breadth than those of

¹ Rolleston, "British Barrows" (1877), p. 564.

² Broca, "Instructions Générales pour les Recherches Anthropologiques," p. 11 (1865).

the second set, which are rounder in form. The first set are, as we will presently see, dolichocephalic, while the latter are mesaticephalic, or brachycephalic.

Sex.—Of the long or dolichocephalic skulls before us No. 163 can readily be singled out as that of a man, while the other three are those of women, though at first sight some doubt might be entertained as to the sex of 346A; more careful examination of it, as well as of the other bones of the skeleton, show that it belongs undoubtedly to the sex to which I have referred it. The skull, and in some respects the pelvis also, illustrates an observation made by Professor Welcher,¹ and confirmed by Professor Rolleston,² that the cases where ambiguity as to sex arises are cases in which female skulls have assumed, or must be supposed to have assumed, male characters. Of the other two round skulls before us, No. 162 is that of a man, and No. 164 that of a woman. This latter, we have found, was considered by Mr. Petrie to be that of a man, and has also been tabulated as such in the "*Crania Britannica*";³ but in the "*Thesaurus Craniorum*" it is described as that of a woman. Without knowing of the discrepancy in the descriptions I classed it as a female. After finding that there had been doubts as to its sex, I placed it before our President, Professor Flower, who independently, and without apparent hesitation, classed it as a female skull. This being the skull of a female, there is reason to believe that the second skeleton in the Newbigging cist was also probably that of a woman, since Mr. Petrie states that its skull and the one before us were exactly alike, and differed from the skulls of the males at the opposite end of each of the cists in being rounder, and the bones of the skeleton shorter and smaller; though against this Dr. Barnard Davis states, very guardedly, however, that the fragments of the second Newbigging skull sent to him showed that "it might probably be that of a man." Though Mr. Petrie was mistaken in regarding the second skeleton in the Rendall cist as that of a man, and, I think by inference, probably also the corresponding one from the Newbigging cist, there is no reason to doubt this very careful and accurate observer when he tells us that the skull of the chief skeleton in the Rendall cist, which fell to pieces, was like the corresponding Newbigging skull, No. 162, that of a man, of exactly the same type. The history of the skeletons found at Rendall and Newbigging is therefore very interesting and suggestive. In both instances we have a man of brachycephalic type interred in the same cist with a woman of the same type,

¹ "*Arch. f. Anthropologie*," vol. i, p. 127 (1866).

² Greenwell and Rolleston, "*British Barrows*," p. 565 (1877).

³ Table II, pp. 242, 243, No. LXXXIII.

who had been laid there after him, and who presented an appearance as if her body had been previously dismembered or roughly handled, and in the Newbigging cist partially burnt. We have, also, interred in close proximity to the Rendall skeletons, the partially burnt body of a woman of dolichocephalic type, and the record of another skull having been found in proximity to the Newbigging skeletons also. Contrasting those indications with what actually obtained amongst savage nations till recently, we have sound grounds for supposing that not improbably it was the custom amongst these ancient inhabitants of Great Britain, on the death of a chief, which in the above instances the conditions of burial would indicate the skeletons of the males to be, his wife was killed, possibly dismembered, and buried along with him, as well as one of his or her retainers. Of the round skulls at Cambridge two are those of men (Nos. 322 and 323), and one that of a woman (No. 330). Of the dolichocephalic skulls, one (No. 329) is a female; the other three (Nos. 325, 326, and 327) I have been obliged to classify as of doubtful sex. Many of their characters are female, but in some important respects they differ very considerably from that sex. Their imperfect condition renders it, without the other bones of the skeleton, impossible to determine their sex accurately. In the "*Crania Britannica*" they have been tabulated as female skulls, but in Dr. Thurnam's original catalogue, now at Cambridge, I find the following note:—"Crania 153-155" (these being the numbers the skulls had in Dr. Thurnam's collection) "were considered female, and are so marked. This seems quite doubtful." The skulls at Leeds and that at Edinburgh are male.

Capacity.—Reference to the accompanying table shows that the capacity of the dolichocephalic male skull No. 163 is amongst the smallest, while No. 322 in the Cambridge Museum is considerably larger than any of the others. The average capacity of the six males is 1534 cc., measured with mustard-seed, according to Professor Flower's method. In order to compare the different measurements of these ancient skulls with those of Scotchmen of the present time, I have given a table of the measurements of eight males, chiefly inhabitants of Caithness, in the College of Surgeons' museum. Unfortunately, want of material has prevented me from adding a similar table of measurements of the female skull, of which we only possess a solitary specimen. The average capacity of the recent skulls is 1,490 cc. The six ancient Orcadian skulls are, therefore, 44 cc. larger than the modern skulls. Compared to male Europeans generally, the average capacity of which, according to Topinard,¹ is 1,560 cc. (deduced from 347 skulls), the Orkney skulls are slightly smaller, though not so

¹ Topinard, "*Revue d'Anthropologie*," 2nd Series, vol. xv, p. 398, *et seq.*

much as might appear from a comparison of the figures, since those measured by Broca and Topinard were cubed with shot, which gives a somewhat greater result than if cubed with mustard-seed, according to Professor Flower's method.

The capacity of the female skulls presents a greater variety than the males. Here we have the two skulls from Skerrabrae, both of which are dolichocephalic, occupying the two extremes of the series, 346A measuring only 1,200 cc., while 346B measures 1,420 cc., showing a difference of no less than 220 cc. The average capacity of the four measured is 1,290 cc. Compared to the average capacity of European women given by Topinard,¹ these skulls are considerably smaller, the average capacity of 232 of the former being 1,375 cc. The difference between the average capacity of the ancient males and females is 244 cc., while that between male and female Europeans is 185 cc. The difference in capacity between males and females, however, does not seem, from the extensive researches of Broca and Topinard,² to have the same significance as was once attributed to it.

The three skulls of doubtful sex were so imperfect that the capacity of none of them could be taken. One, however, is complete enough to admit of the capacity being estimated from the length, breadth, and height, according to Broca's method.³

A glance at the table will show that it is impossible to obtain any information respecting the relative capacities of the dolichocephalic and brachycephalic crania.

In the table of measurements I have added a column of the capacities of the skulls, both ancient and modern, taken with shot, according to Broca's most recent system, as laid down in a paper by M. Topinard in the "*Revue d'Anthropologie*," 2nd Series, vol. v, p. 394, July, 1882.

Cephalic Index.—This is the relation of the breadth of the cranium to its length, the latter being taken as 100. Before we can discuss this subject we must first fix the points between which the measurements of breadth and length are to be taken. The breadth of the skull has been taken by different observers as the maximum width of the parietal region, or that between the upper parts of the squamosals, or simply the maximum diameter, whether it be a parietal or squamosal. This latter is now almost universally adopted, and is, I think, the most satisfactory method of estimating the cranial breadth. Unfortunately the same unanimity of opinion does not exist as to the measurement of length. In this country Professor Rolleston advocated strongly measuring the length between the optryon and the most pro-

¹ Topinard, "*Revue d'Anthropologie*, 2nd Series, vol. xv, p. 398.

² *Loc. cit.*

³ Broca, "*Instructions Craniologiques*," p. 112 (Paris, 1875).

minent part of the occipital bone, and this plan has been adopted by Drs. Barnard Davis¹ and Thurnam, and by Professor Flower. Broca and other continental anthropologists have adopted the maximum length between the glabella, or nasal eminence, and the most prominent part of the occipital bone. Professor Rolleston, advocating the first mode of measuring the length, seems to have based his preference for the ophryo-occipital length chiefly because at the ophryon, to use his own words, "the applied arm of the compasses comes there into nearer relations with the cavity containing the cerebrum,"² his object evidently being to ascertain the length of the brain cavity; and much might be said in favour of measuring in this way. Against it I think we may adduce the facts that the point on the occipital bone upon which the one arm of the calipers rests, if the other is resting on the ophryon, is lower down than when the glabella is taken as the starting-point. The result of this is that we do not get the true length of the head, as it is seen on the living subject. Again, the length of the head in the living is usually estimated as the distance between the glabella and the most posterior part of the occiput: this corresponds to the glabello-occipital length. These points also being maximums, can be more easily and accurately measured than by taking a point on the brow, which varies more or less according to the measurer. The glabello-occipital length is, upon the whole, perhaps, the measurement most commonly adopted by anthropologists. It is also most nearly represented in drawings of the *norma verticalis* of the skull. That an understanding be arrived at as to which of the two methods is to be

¹ I may point out that M. Topinard has made a slight mistake in his work on "Anthropologie" (1876), where he states that Drs. Barnard Davis and Thurnam agree with Broca and others in measuring the length of the skull. Dr. Davis defines his measure of length as being "from the glabella to the most prominent point of the occiput, *the glabella being regarded as an inch above the naso-frontal suture*" (the italics are mine).

The following comparison of the lengths of the Caithness skulls given in Table II. will be, I think, convincing proof of Dr. Barnard Davis's measurement being the ophryo-occipital length; the first column is the number of the skull; the second is the measurement of length as given in the "*Thesaurus Craniorum*," converted from the English to the metric scale; in the third column is the ophryo-occipital length, as measured by myself; while the fourth is the glabello-occipital length, as defined by Broca:—

No.	Measurement of length in " <i>Thesaurus Craniorum</i> ."	Ophryo-occipital length.	Glabello-occipital length of Broca.
No. 176	.. 188 mm.	.. 188 mm.	.. 195 mm.
" 177	.. 185 "	.. 185 "	.. 186 "
" 178	.. 178 "	.. 179 "	.. 184 "
" 179	.. 183 "	.. 182 "	.. 184 "
" 180	.. 188 "	.. 187 "	.. 187 "
" 184	.. 181 "	.. 181 "	.. 185 "
" 185	.. 171 "	.. 172 "	.. 177 "

² Greenwell and Rolleston, "British Barrows."

adopted is very necessary, as the difference in the cephalic index is often very considerable, according as the one or the other method is used, and the results cannot be compared. In the present uncertain state of matters I have thought it advisable to give both the glabello- and the ophryo-occipital lengths, and the cephalic index formed by each.

The glabello-occipital length ranges from 186 mm. to 193 mm. in the three males, and from 178 mm. to 187 mm. in the six females. In the three skulls of doubtful sex the variation is between 190 mm. and 198 mm. The ophryo-occipital length in the six males varies from 176 mm. to 193 mm., and in the females from 165 mm. to 185 mm., the two most brachycephalic skulls being the shortest and also the broadest. The variations in maximum breadth of the skulls are less than those of the length. Of the male skulls, the narrowest has a maximum breadth of 144 mm., while the broadest measures 149 mm., the average being 146·5 mm. Of the females, the narrowest is 132 mm., while the broadest is 146 mm., the average being 137 mm. The three uncertain skulls vary from 133 mm. to 137 mm. in breadth, the average being 134·5 mm. The cephalic index presents considerable variations, indicating thereby considerable variation in the form of the cranium, the lowest index being 69·4, and the highest 82·0. Classifying the skulls according to their cephalic index, calculated from the maximum breadth as compared to the maximum or glabello-occipital length (the latter being taken as 100), we find that the male skull 163, and the female skulls 346A, 346B, and 165 of the College collection, and 325, 326, 327, and 329 (one female, and three of doubtful sex) of the Cambridge collection, or eight out of fifteen skulls, belong to the true dolichocephalic class of Broca; 323 (a male) of the latter collection is sub-dolichocephalic; the male skull 162 of the College collection, and 324 (a male) and 330 (a female) of the Cambridge collection, as well as the male skull at Edinburgh, and that at Leeds, or five out of the fifteen, are mesati-cephalic, while 164 of the College collection is sub-brachycephalic.¹

Calculating from the ophryo-occipital length and maximum breadth, and grouping the skulls according to their cephalic

¹ Broca's table of classification of crania, according to the cephalic index, as given in the "*Revue d'Anthropologie*," vol. i, p. 385 (1872), and in the "*Instructions Craniologiques*," p. 179, (1875), is as follows:—

Dolichocephalic	{ True dolichocephalic, below and up to 75·0
	{ Sub-dolichocephalic, from 75·0 to 77·8
Mesati-cephalic ..	.. .. .. 77·8 to 80·0
Brachycephalic	{ Sub-brachycephalic, .. 80·0 to 83·3
	{ True brachycephalic, above 83·0

index, as Professor Flower has done,¹ a plan which has been followed in most of the recent monographs read before this Institute, we have results somewhat different. 325, 326, 327, 329, and 346B, or five out of fifteen, are dolichocephalic; 346A, 165, 163, 323, 324, and the Leeds skull, or six of the fifteen, are mesaticephalic; while 162, 164, 330, and the Edinburgh skull, or four of the fifteen, are brachycephalic. Comparison with the table of measurements of the eight modern Scottish male skulls shows that while by Broca's classification the ancient skulls are either truly dolichocephalic or mesaticephalic, one half of the modern skulls are sub-dolichocephalic, and two are mesaticephalic; or by Professor Flower's method, while the ancient skulls are almost equally divided amongst the three classes, the modern skulls are all mesaticephalic except two, which are brachycephalic.

An interesting and instructive table may be compiled by placing the indices obtained by each method side by side, arranging the series of skulls according to their cephalic index, and indicating the locality from which each was obtained, and its sex. This I have attempted to do below.

A.—ANCIENT ORCADIAN SKULLS.

CEPHALIC INDEX CALCULATED FROM MAXIMUM LENGTH (GLABELLO-OCCIPITAL) AND BREADTH

True dolichocephalic.

No. of skull.	Sex.	Index.	Locality.	
327	doubtful	69·2	Burg	Saverough.
325	"	69·4	"	"
326	"	70·0	"	"
346A	♀	70·6	Piets' House	Skerrabrae.
346B	♀	72·3	"	"
329	♀	74·6	Cist	Harry.
165	♀	75·0	"	Rendall.
163	♂	75·0	"	Townhill.

¹ Professor Flower has proposed the following classification, according to the cephalic index, Osteol. Cat. Roy. Coll. Surg. Mus., Part I, p. 251 (1879):—

Dolichocephalic	..	..	below 75·0
Mesaticephalic	75·0 to 80·0
Brachycephalic	above 80·0

Sub-dolichocephalic.

323	♂	77·2	Burg	Saverough.
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Mesaticephalic.

Leeds ¹	♂	77·9	Burg	Saverough.
324 ¹	♂	78·0	"	"
162	♂	79·6	Cist	Newbigging.
330	♀	80·2	Burg	Sanday.
See. Ant. Scot. ¹	♂	81·0	"	Saverough.

Sub-brachycephalic.

164	♀	82·0	Cist	Rendall.
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CEPHALIC INDEX CALCULATED FROM OPHTHYO-OCCIPITAL
LENGTH AND MAXIMUM BREADTH.

Dolichocephalic.

No. of skull.	Sex.	Index.	Locality.	
325	doubtful	70·5	Burg	Saverough.
327	"	72·1	"	"
346a	♀	72·3	Picts' House	Skerrabrae.
326	doubtful	72·7	Burg	Saverough.
329	♀	74·6	Cist	Harray.

Mesaticephalic.

346A	♀	75·0	Picts' House	Skerrabrae.
165	♀	75·0	Cist	Rendall.
163	♂	76·2	"	Townhill.
323	♂	77·2	Burg	Saverough.
Leeds	♂	78·7	"	"
324	♂	79·2	"	"

Brachycephalic.

162	♂	81·8	Cist	Newbigging.
164	♀	82·0	"	Rendall.
Scot. Ant. Scot.	♂	82·4	Burg	Saverough.
330	♀	83·6	"	Sanday.

¹ These indices are approximate only.

B.—MODERN SCOTTISH SKULLS.

CEPHALIC INDEX CALCULATED FROM MAXIMUM LENGTH
AND BREADTH.*True dolichocephalic.*

No. of skull.	Sex.	Index.	Locality.
176	♂	72.3	Caithness.

Sub-dolichocephalic.

180	♂	75.9	Caithness.
178	♂	76.6	Lewis.
184	♂	77.3	Caithness.
346	♂	77.7	Highlands.

Mesaticephalic.

177		78.5	
185		79.1	Highlands.

Sub-brachycephalic.

179	♂	81.5	Caithness.
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CEPHALIC INDEX CALCULATED FROM OPHTHALMO-OccIPITAL
LENGTH AND MAXIMUM BREADTH.*Mesaticephalic.*

176	♂	75.0	Caithness.
180	♂	75.9	
178	♂	78.8	Lewis.
177	♂	78.9	Caithness.
176	♂	79.0	"
184	♂	79.0	"

Brachycephalic.

185	♂	82.0	Highlands.
179	♂	82.4	Caithness.

Index of Height.—Calculated from the glabello-occipital length and basi-bregmatic height, this averages in the six male skulls 75·2, and in the six females 71·9; calculated from the ophryo-occipital length it is 76·3 in the males, and 72·0 in the females. The height index of the eight modern male skulls is 72·7 by the first method, and 74·1 by the second. The basi-bregmatic height varies little in the individual skulls of either sex, except in the female 165, in which it is exceptionally low, measuring 10 mm. less than in the brachycephalic skull 164, which was found only a few feet from it. The frequent lowness of the vault of the cranium in the dolichocephalic race observed by Professor Rolleston¹ is further illustrated by skull 326, which is only 124 mm. in height. The average height of the six male skulls is 141 mm., and of four females 129·2 mm., a sexual difference of 11 mm. Compared with the maximum breadth, which averages in the male skulls 146·5 mm., in the females 137·0 mm., we find the height is less in all cases; the difference between these measurements averaging in the males 5·5 mm., and in the females 7·8 mm.; or the average height to the average breadth is in the males as 97·3 to 100, and in the females as 94·2 to 100.

The Circumference.—The horizontal circumference of the male skulls averages 531 mm., while that of the females is 508 mm., or 23 mm. less than the males; that of two of the skulls of doubtful sex perfect enough to be measured is 518 mm. Compared with the eight male modern skulls the ancient ones are somewhat larger in circumference, the former averaging 524 mm. The moieties of the circumference anterior and posterior to the auriculo-bregmatic line, or the pre-auricular and post-auricular circumferences of the ancient skulls, of both sexes, are so variable that from the small number examined no deductions can be drawn as to the relative sizes of each in the dolichocephalic and brachycephalic races. In skull 326, one of doubtful sex, the pre-auricular circumference is less than that of any of the female skulls, a fact which seems to point to deficient frontal development, in this instance at least.

The transverse vertical circumference is exactly the same in the three ancient male skulls, measuring 490 mm. in each. In the modern skulls it averages 452 mm., or 38 mm. less than in the ancient. In the ancient brachycephalic female this measurement is considerably greater than in the dolichocephalic skulls of the same sex, being in the former 443 mm., and averaging in the latter 418 mm., or 25 mm. less. In No. 326, of doubtful sex, it is 415 mm., or 2 mm. more than that of the lowest female skull. The antero-posterior vertical circumference, obtained by adding the longitudinal arcs, the length of the foramen magnum, and the

¹ "British Barrows," by Greenwell and Rolleston, p. 640 (1877).

basi-nasal length together, averages in the ancient males 523 mm., in the females 496 mm., and in the modern males 513 mm.

Projections.—In whichever way these are measured, whether, as Broca has done, with the skull placed so that the condylo-alveolar line is horizontal, or, as Professor Flower has recommended, with the axis of vision horizontal, it is almost impossible to obtain accurate measurements. Certainly Professor Flower's method is the more accurate, but even when taken in this way, with the most improved instrument, such as I exhibit to-night, in which the skull is adjusted to the proper position by means of a screw, a variation of 2 to 3 mm. occurs in the same skull when measured at different times. Though this may not matter so much in the anterior and posterior projections, yet 2 mm. is a considerable variation in the facial projection.

The figures given in Tables I and II are the average results of several independent measurements at different times. The average total projection of the two males is 199 mm., and of eight modern males 196 mm. The average of four females is 185 mm. The total projections of the brachycephalic female is shorter than that of the three dolichocephalic females, being 181 mm. in the former, and averaging in the latter 186 mm.

As I think it instructive to show the individual measurements from which those of the projections of the ancient Orcadian skulls given in Table I were arrived at, I append them in the following table:—

PROJECTIONS.

No. 162	Ant. Proj.	Post. Proj.	Facial Proj.
1st Meas ^t ..	100 mm.	101 mm.	25 mm.
2nd	100 ..	100 ..	26 ..
3rd	99 ..	100 ..	27 ..
4th	100 ..	100 ..	26 ..
5th	100 ..	101 ..	28 ..
No. 163			
1st Meas ^t ..	99 mm.	98 mm.	25 mm.
2nd	97 ..	100 ..	15 ..
3rd	98 ..	101 ..	20 ..
4th	100 ..	102 ..	23 ..
5th	98 ..	100 ..	14 ..
No. 346A.			
1st Meas ^t ..	97 mm.	90 mm.	22 mm.
2nd	95 ..	92 ..	20 ..
3rd	95 ..	94 ..	23 ..
4th	94 ..	91 ..	18 ..
5th	96 ..	94 ..	22 ..
6th	95 ..	93 ..	20 ..
7th	96 ..	93 ..	21 ..
No. 346B.			
1st Meas ^t ..	91 mm.	92 mm.	9 mm.
2nd	88 ..	96 ..	8 ..
3rd	88 ..	99 ..	11 ..
4th	86 ..	98 ..	8 ..
5th	89 ..	99 ..	10 ..
6th	88 ..	98 ..	11 ..
7th	88 ..	99 ..	8 ..

The *auriculo-orbital* width varies considerably in the female skulls: in the two from Skerrabrae it is 61 mm., while in the Rendall skulls it is 66; in three male skulls it averages 71 mm., and in the modern males 65·2.

Gnathic Index.—This ranges from 91·3 to 102·1, giving an average in males and females, between which there does not seem to be any difference, of 97·0. In all instances, except in the female skull 330, the basi-nasal length is greater than the basi-alveolar. The same condition obtains in the modern Scottish skulls. Both the ancient and the modern skulls belong to the mesognathous group of Professor Flower.¹

The *Facial Index*, or the relation of the bi-zygomatic width to the ophryo-alveolar length, the former being taken as 100, is 75·8 in the females, and 73·9 in the males. In the females the indices of the dolichocephalic skulls are all higher than that of the brachycephalic skull. The facial index of the eight modern male skulls averages 74·4.

The inter-orbital width averages exactly the same in both the ancient and modern skulls, viz., 23·4.

The portion of the maxillary bones between the floor of the nose and the alveolar margin is well developed, averaging 23·3 mm. in the males, and 23·6 mm. in the females; in the modern skulls it averages 21 mm.

The form of the orbits vary; in some of the skulls they are round, as, for instance, in 346B, whereas in the majority they are of a square shape. The orbital index, or the relation of the height to the breadth, indicates this very well in the skull referred to, it being considerably higher than in the others. The only other skull of those exhibited which approaches this form is 165, in which the orbit is more or less round, though not so markedly as in the previous instance.

The indices show considerable variety, both in the individual skulls and in the sexes. The two male skulls on the table, 162 and 163, are microseme, and 323 at Cambridge is mesoseme, but the average index of the three (82·8) places them in the microseme group. Of the females 346A and 164 are microseme, the others are mesoseme, though 346B is within two decimal places of being in the megaseme group. The average of this index in the females is 85·0; they are therefore mesoseme. The average index of the eight modern skulls is 84·5; they are consequently

¹ Professor Flower divides crania, according to their alveolar indices, into the following categories (see *Osteolog. Cat. Mus. Roy. Coll. Surg.*, Part I, p. 252, 1879):—

Orthognathous	below 98·0
Mesognathous	98·0 to 103·0
Prognathous	above 103·0

mesoseme, though half of them are microseme, as an examination of the table will show.

Nasi-malar Angle.—This angle could only be measured in a few of the skulls on account of the imperfect state of some of them. In the male skull 162 the angle approaches the size it obtains in the Mongolian skulls, which are distinguished by their flatness in this region, and consequently high nasi-malar angle. The slope of the nasi-orbital plane in the modern skulls corresponds to that of skull No. 163, averaging in them 135° . In the females the backward and outward slope of this plane is still greater than in the males, the nasi-malar angle being in them 128° — 132° , except in No. 330 of the Cambridge collection, where it is 143° . It is worthy of observation that this angle is highest in the brachycephalic skulls.

The Nasal Index varies from 40.2 to 58.1, being rather greater in the females than in the males; consequently the form of the nasal aperture is broader in them than in the males. From the small number of male skulls not much importance can be attached to this comparison however, and the indices of both sexes may be included in one average; no perceptible difference seems to exist between the indices of the brachycephalic and the dolichocephalic skulls. The average index of all the skulls is 48.7; they are therefore mesorhine. The average index of the modern male skulls is 48.2, so that they correspond very closely with the ancient. Regarding the form of the nasal bones, and other nasal characters, I shall have something further to say.

The Palatal Index is higher in the male skulls than in the females, the average index of the former being 121.3, and 113.4 in the latter. The skull of uncertain sex shows a considerable variation from the others in that this index is much higher, being 128.0. The palatal index of the eight modern male skulls is 112.1; lower, therefore, considerably, than in the ancient males, and corresponding to that of the females. The measurements of the palate, from which these indices are derived, differ from Broca's in that the length is measured from the alveolar point to the centre of a line drawn across the maxillary tuberosities, and the breadth is the maximum between the outer borders of the alveolar arch, as described by Professor Flower.¹

The Mandible.—The bigonial width shows a marked sexual difference, the average for the males being 104.5 mm., while that of the females is 89 mm., or 15.5 mm. less than the males. A corresponding difference in width is shown by the bi-condylar width. The height of the symphyseal posterior is also smaller in the females by 6 mm. on the average; but the

¹ See "Memoir on Fijian Crania" ("Journ. Anthropol. Inst.," Nov., 1880, p. 161).

molar height does not maintain the same relation, the difference between the two sexes being only 3·3 mm. less in the females than in the males. The sexual difference is still more marked in the height of the coronoid, which in the males averages 70·7, and in the females 57·3 mm, or 13·4 mm. less. The difference in length of the portion of the ramus between the gonion and the symphysis averages 16·8 mm. in the two sexes, the females being the shorter by that amount. The height of the ascending ramus and its antero-posterior breadth shows also considerable difference in the two sexes, being considerably smaller in the female.

The form of the mandible in the skulls of uncertain sex approaches more nearly to the male type, as indicated by those before us, than to the females.

The mandibular angle in the males averages $116^{\circ}3'$, and the symphysial $77^{\circ}5'$; in the modern skulls the average of the former angle is $121^{\circ}6'$, and of the latter $72^{\circ}2'$; the chin in the modern is therefore more pointed than in the ancient skulls. In the females the mandibular angle averages 122° , and the symphysial $83^{\circ}2'$.

Having now directed attention to the principal characters indicated by our table of measurements, there remain yet to be described certain morphological details which cannot be expressed by ordinary measurements; these are indicated in the various *normæ*, viz.: *norma lateralis*, *norma verticalis*, *norma frontalis*, *norma occipitalis*, and *norma basilaris*, which I will not treat *seriatim* in each skull, but give the general results. All the skulls are those of adults, varying, probably, from between thirty to seventy years of age.

The Condition of the Teeth.—In skull 162 several of the teeth have been lost after death, but the first right lower molar during life. Those that remain are considerably worn down, and have tartar deposited upon them. In No. 163 the last right upper molar is absent, and there is no trace of its ever having been developed. The teeth are somewhat worn, but not more so than usual in a man of middle age; traces of the cusps still remaining, and a fifth tubercle is present on the last lower left molar. The skull 323, at Cambridge, has almost all the teeth present except the wisdom teeth, which appear never to have been developed; but they are very much worn, and the surfaces are "oblique and jagged, as if from gnawing roots or tearing flesh from bones," as Dr. Thurnam has very aptly expressed their condition.¹ In the skull at Leeds one of the wisdom teeth is absent, and the others are considerably corroded, but not quite so advanced in wear as in the previous skull, the skeleton having

¹ "Gentleman's Magazine," *loc. cit.*

been that of a young man about thirty years, while No. 323 is that of an older man. The skull in Edinburgh presents a condition of the teeth, as regards wear, similar to that in the Leeds skull. Of the female skulls the teeth of No. 346A are very much worn, but in excellent preservation; the cusps have been worn away. In No. 346B they are normal and very little worn; a small fifth tubercle is developed on the last left lower molar. In No. 165 the teeth are all lost; several have been lost during life, and the alveolar margin is shrunk. Those of No. 164 are very much ground down, and have tartar deposited upon them. Dental prognathism is indicated in No. 346A. In none are the teeth abnormal in size. In those of doubtful sex the teeth are worn down, but in good condition in No. 325.

The Sutures.—In No. 162 they are much obliterated and difficult to trace, owing to the skull having been painted over with preservative material. Generally speaking, their condition as to closure seems to be indicated by No. 3 of Broca's standard tables,¹ while their complication is represented by No. 3 of the same author. Those of skull 163 correspond to 2 and 3, both in their complication and closure. In No. 346A the complication of the chief sutures is represented by 2 to 4, and the degree of closure by 3. The wormian bones are medium sized, Nos. 2 and 3 ("*moyens*" of Broca). In 346A the sutures correspond to 3 and 4 in complication, and 3 as to their state of occlusion; there are few wormian bones, and those are small ("*petit*" of Broca, No. 1). In skull 164 the sutures can hardly be traced, their occlusion corresponding to No. 0. In skull 165 they vary in complication from 2 to 4, and 2 to 3 as to their state of closure; the wormian bones are small, being represented by No. 1.

The other skulls at Cambridge which I have examined show similar conditions as to complications and closure of the sutures. It may be generally stated that the sutures of these skulls are, could the term applied by Broca to indices be used, "*mesoseme*." In none of the skulls, either in the College of Surgeons' museum or in the museum at Cambridge, is there metopism, or persistence of the frontal suture, present. The basilar suture is closed in all the skulls.

The development of the inion is feeble, never more than is represented by Broca's figure² No. 1, and in 346B and 164G No. 0.

In skull 163 an epipteric bone is developed; this is of triangular shape, and does not stretch across the whole width of the *alisphenoid*, which accordingly articulates antero-superiorly with

¹ "Instructions Générales pour l'Anthropologie," Pl. VI (1865).

² *Ibid.*

the frontal, postero-superiorly with the parietal and epipteric, and postero-inferiorly with the temporal.

Some of the skulls are what Mr. Busk calls *phænozygous*, or partially so: that is to say, in the *norma verticalis*, when held at arm's length and looked at with one eye, the other being shut, both zygomatic arches are to be seen at the same time. The condition depends upon the comparative development of the fronto-parietal region, and the zygomatic arches. It is complete in skulls 162 and 346A, and partial in 346B. The zygomatic arches being broken in several of the series, it is impossible to tell the condition which obtains as a rule. In No. 164, however, nothing can be seen of the arches.

The *tubera* of the parietal bones are well marked in 364A, a condition which does not obtain in the other skulls I have examined. The prominence of the *tubera* is associated, in this instance, with a narrowness of the base of the skull, conditions found by Weisbach¹ usually to co-exist, and considered by him to be a child-like character retained most commonly in female skulls which have failed to attain the rounding out of the parietes which occurs from the latest expansion of the brain.² This skull shows, to some extent, the "ill-filled" condition of Cleland³ which does not obtain in the other skulls, and which is in keeping with the prominent *tubera*.

Asymmetry of the posterior part of the cranium occurs in some of the skulls. In No. 162 it exists on the left side, and in Nos. 346A and 346B on the right side. The distortion in the first-mentioned specimen has been commented on by Dr. Barnard Davis, who thinks it open to question as to whether or not the early Britons were in the habit of distorting the skulls of their children, a custom which has been traced to exist in many parts of Europe in early times, as well as amongst the savage races of America and Polynesia, &c. The distortion, such as is seen in the skulls before us, is often found to be on the right side, as in two of these three skulls in which it occurs, and has been attributed by some to the skull having lain for a number of years on the same side, and having been subject to superincumbent weight. Others have attributed it to the subject of it having been carried when an infant with the head pressed against the person of the mother, and have accounted for the deformity being most frequently found on the right side by the fact that mothers are usually right-handed, and in order to have this hand free they would naturally carry their children on the left arm; the right side of the child's body would there-

¹ "Arch. f. Anthropologie," vol. iii, p. 68.

² Cleland, "Phil. Trans.," 1870, p. 149.

³ *Loc. cit.*

fore be next to the left of the mother's. The question as to whether or not the distortion, such as is present in these skulls, and in those figured by Professor Huxley in the "Prehistoric Remains of Caithness," is not due to simple asymmetrical development of the skull, has not, I think, received the importance that is due to it. It is a fact well-known to all who have made investigations on the form of bones that asymmetry is one of the most common occurrences in the skeleton and for which no cause can be assigned. It is also clear that bones are not developed with any mathematical accuracy. Deformity from pressure is always accompanied, as far as I have seen, by a distinct *flattening* of the part where the pressure has been applied or acted upon. Now in the skulls before us, and in the others I have examined, there is no trace of any flattening: the outline presents an unbroken curve, only it is not symmetrical, on each side of the mesial line.

The form of the forehead varies considerably. The glabella is prominent in some and very flat in others, as is seen by comparing the ophryo- and glabello-occipital lengths. Again, the forehead in some of the skulls is almost perpendicular, while in others it recedes more rapidly. The accuracy of Professor Rolleston's assertion, that the forehead of brachycephalic skulls "is sometimes vertical, and especially in cases where the whole skull and skeleton are marked by great strength, or even ruggedness, it is markedly sloping," is well illustrated by skulls 164 and 162. The sloping of the forehead cannot, however, be considered to be a sign of deficient development of the anterior lobes of the brain, or a vertical forehead of the reverse without reference to the rest of the head, and in neither of these skulls is there any deficiency in the total circumference, or in the pre-auricular portion of it. The deficiency occasioned in No. 162 by the backward sloping of the frontal bone is made up by the extra width of that bone, as indicated by its maximum breadth. The different cranial measurements of No. 164, likewise, show that it is in all respects well balanced, the shortness being compensated for by greater breadth, while the circumference remains the same as in the other skulls. The sloping backwards of the cranium is always more marked in males than in females, a fact that is illustrated very clearly in this series of skulls. Prominent supra-orbital ridges coupled with a prominent overhanging glabella, as in skull 162, causes the forehead to have the appearance of receding much more than it does in reality.

The supra-orbital ridges are well developed for a female in the skull 346A, and also in the skulls of doubtful sex at Cambridge, while they are very flat in the others I have examined. The form of the forehead, as to breadth, is well indicated by the minimum frontal diameter. It is narrowest in the dolicho-

cephalic skulls. 346B exhibits a peculiar roundness and well-filled appearance of the frontal region, together with a degree of sharpness of the forehead which is not observable in the other skulls, except it be in No. 163. A front view of No. 346A, fig. 2, Pl. I, exhibits, besides the narrowness of the frontal region, a marked asymmetry of the temporo-parietal portion of the cranium, which is twisted round to the left side: this is especially well seen in a stereoscopic tracing of the *norma frontalis*. The profile of the region of the glabella is represented by the following numbers of Broca's table¹:—162, by outlines No. 3; 163, by No. 2; 346A, by No. 1; 346A, 164, and 165, by No. 0.

The auriculo-bregmatic line.—When the cranium is placed with the axis of vision horizontal, this line is in all the skulls, and in both sexes, inclined forward at the upper end, a condition which Professor Flower found to obtain in the Andamanese skulls, while in European skulls this line, he says, is usually vertical, or may incline backwards.² In the eight modern Scottish skulls I find that in four the line is inclined more or less forwards, and in four more or less backwards.

The characters presented by the form of the nose can, unfortunately, only be imperfectly studied in this series, because in several of the skulls the nasal bones are broken, as is also the nasal spine. In No. 162 the outline of the curve of the nasal bones is represented by No. 4 of Broca's table,³ and the nasal spine by No. 2; in skull 163 the nasal bones by No. 3, and the spine by No. 1; in 346A the nasals by No. 4, and the spine by No. 2; in 346B the nasals by No. 3, and the spine by No. 2; in No. 165 the nasals by No. 4, and the spine by No. 2 or 3. The base of the nose is narrow, and the nasal bones are usually laterally compressed at their basal suture, except in skull 165, in which the root of the nose is flat. The nasal bones are narrow superiorly, and broaden as they descend and project forwards. The lower margin of the nose is well formed, a well-marked ridge existing between the floor of the nasal cavity and the anterior or facial surface of the maxilla.

The malar bones are heavy in No. 162, being deep from above downwards. In this respect considerable difference is manifested in the various skulls, as, for example, between 346A and 346B, in the latter the malars are heavier than in the former.

The Pelvis.—Next in importance to the form of the skull in determining rare characters is the pelvis. Unfortunately we have only a single specimen of this part of the skeleton, that

¹ "Instructions Générales pour l'Anthropologie," Pl. VI.

² "Journ. Anthropol. Inst.," Nov., 1879, p. 42.

³ *Loc. cit.*

belonging to the female skeleton 346A. In the general appearance the bones are somewhat rugged, and in this respect resemble those of a male. This is probably due to the subject having possessed a strongly developed muscular system. The measurements which I have found to be of chief importance are given in the following table, and have been taken in the manner recommended by me in a previous paper:—¹

	Measurements of ancient Orcadian pelvis.	Average of these measurements in Europeans.
Sacral length	110 mm.	101 mm.
Sacral breadth	125 "	118 "
Ant. sup. iliac spine width ..	245 "	231 "
Inter-iliac crest width ..	270 "	271 "
Pelvic height	207 "	201 "
Iliac breadth	154 "	157 "
Posterior superior iliac spine width ..	79 "	84 "
Acetabulo-symphysial width ..	124 "	117 "
Pubo-ischeal depth	94 "	91 "
Antero-posterior diameter of brim ..	101 "	106 "
Transverse diameter of brim ..	132 "	133 "
Antero-posterior diameter of outlet ..	115 "	116 "
Transverse diameter of outlet ..	102 "	116 "
Sub-pubic angle	76° "	76° "

The chief points of difference in the ancient Orcadian pelvis from the average modern European pelvis consist in the large size of the sacrum, it being both longer and broader than usual. The anterior superior iliac spines are farther apart, consequently the outline of the iliac crest is not so much curved as usual; the distance from the posterior border of the acetabulum to the symphysis is longer, and the pubo-ischeal depth is somewhat greater than the average; the antero-posterior diameter of the brim is shorter, and the transverse diameter of the outlet is somewhat narrower than usual. The transverse diameter of the brim, the crest width, breadth of the sub-pubic angle, and most of the other measurements correspond to the average of European females. The pelvic index, or the relation of the antero-posterior to the transverse diameter (the latter being taken as 100), which indicates the fundamental form of the pelvis, is 76·5, while that of 35 Europeans, given in Table II of my paper, already cited, is 82·2. The transverse diameter of the pelvic inlet is therefore greater in proportion than the antero-posterior. The opposite condition obtains at the outlet, where the antero-posterior diameter is greater in proportion to transverse. The pelvic outlet presents decided male characters, as regards its transverse diameter, but those are compensated for by the sub-pubic angle

¹ "Pelvimetry," by J. G. Garson, M.D. ("Journ. of Anat. and Phys.," vol. xvi, p. 106, 1881)

being decidedly female in character; indeed I have only measured one male pelvis which had so large an angle as 76° , the average sub-pubic angle in the male being 64° . The form of the pelvis, taking all the measurements into consideration, does not exhibit any signs of being that of a low type, and, but for the shortness of the antero-posterior diameter of the brim, and the narrowness of the outlet, would be perfectly normal.

The Limb Bones.

The following are the measurements of skeleton 346A, the only long bones of the ancient Orcadians I have been able to measure:—

	Right.		Left.		Mean.
Clavicle ..	136 mm.	..	140 mm.	..	138 mm.
Humerus ..	325 "	..	318 "	..	321.5 "
Radius ..	241 "	..	238 "	..	239.5 "
Femur ..	445 "	..	442 "	..	443.5 "
Tibia ..	367 "	..	367 "	..	367 "

The mean length of the clavicle being 138 mm., and that of the femur 443.5 mm., the length of the former as compared with the latter (this being taken as 103) is 31.1. In the average European male skeleton the clavicle is to the femur as 32.7 to 100, as was pointed out by Professor Flower, who also found in the Andamanese¹ that the clavicle in the males is to the femur as 29.1 to 100, and in the females as 28.3 to 100. On the assumption, then, that the same proportion exists between the clavicle and femur of the two sexes, in Europeans as in Andamanese, the length of the clavicle to that of the femur of this ancient Orcadian would be exactly normal. In the skeleton of a French woman in the College museum the proportion of the clavicle to the femur is 30.6 to 100.

The combined length of the humerus and radius shows the right limb to measure 566 mm., and the left 557; the right arm is therefore 10 mm. longer than the left. This condition is one which I have found to occur in two out of every three skeletons in a series of fifty which I examined. The combined lengths of the femur and tibia give a length to the right lower limb of 812 mm., and to the left of 809 mm.; the right extremity is therefore also the longer by 3 mm. This is somewhat contrary to what is generally the case, as I have pointed out,² that in 79 skeletons I found 41 instances where the left limb was the longer, and in these its average preponderance was 3.8 mm.;

¹ *Loc. cit.*

² "Journ. of Anat. and Phys.," vol. xiii, p. 502 (1879).



TABLE I.—MEASUREMENTS OF ANCIENT SKULLS FROM THE ORKNEY ISLANDS.

[illegible]

TABLE II.—MEASUREMENTS OF EIGHT MODERN SCOTTISH MALE SKULLS.

(1) Taken after Professor Flower's method, with mustard-seed.	(18) Calculated from the glabella-occipital length and basibregmatic height.	The other measurements according to Broca's method, published in the "Instructions Craniologiques," Memb. Anth. Soc., Paris, 1873; except the capacity taken with shot, which is taken according to instructions given in a paper by M. Topinard, in the "Revue d'Anthropologie," July, 1882.	(Ap.) Means that the condition of the skull did not admit of the exact measurement being taken, but those given with this affix are correct to within one, or at most about two, millimetres.	(Est.) Means estimated according to Broca's instructions when the measurement could not be taken.	Edinburgh, are entirely taken from measurements of these skulls given in the "Crania Britannica." They seem to agree in the mode in which they have been measured with those measured by us, but we do not guarantee their correctness, not having had an opportunity to verify them.	Some measurements, not given in the "Instructions Craniologiques," have been added, e.g., nasal-malar angle. These are to be found in memoirs by Professor Flower, in the "Journal of the Anthrop. Inst.," on the "Osteology of the Andaman Islands," and on the "Osteology of the Fijians."
(1a) Taken after Broca's method, with shot No. 8.	(16a) " " " " epityro-occipital length and basibregmatic height.			(Ar.) Average measurement.		
(9) Estimated from the glabella-occipital (maximum) length and maximum breadth.	(20-27) Estimated with the visual axis, horizontal.			The measurements given of skulls 304, Philis, Soc. Leeds, and Soc. of Antiq. Scot.,		
(16a) " " " " epityro-occipital length and maximum breadth.	(47) Measured from the centre of a line passing behind the dentary alveolus of the maxilla.					

in 20 instances the left was the longer, in these the preponderance was 2.9 mm.; while in 9 cases of the 70, the limbs were equal. Comparing the upper with the lower limb, and taking the mean length of each (that of the upper being 561 mm., the lower 810.5 mm.), we find that the *inter-membral index*, or the relation of the upper to the lower limb, the latter being taken as 100, is 69.3, which is identical with what Professor Flower found it to be in the European (69.2),¹ and little different from what Broca found it to be in nine skeletons of the same race (69.73).

The femero-humeral index, or the ratio of the humerus to the femur, the latter taken as 100, is (calculated from the mean lengths of each bone) 72.9, precisely the same as Professor Flower found it to be in eleven Europeans, Broca making it 72.2 in nine Europeans.

The femero-tibial index, or the ratio of the length of the tibia to the femur, the latter being 100, is 82.7, while in fourteen Europeans Professor Flower found it to be 82.1.

The humero-radial index, or the length of the radius compared to that of the humerus, the latter being 100, which is perhaps the most important as a race character, is 74.1. Professors Broca and Flower independently ascertained this to be in twenty-three European skeletons 73.9. The length of the feet is, as nearly as can be estimated, about 24 cm.

Only a portion of the left scapula accompanies the skeleton. This shows an united fracture of the acromion and part of the spine.

The humerus has no olecranon foramen, or supra-condyloid tubercle; its angle of torsion varies in the right and left bones; in the former it is 35°, and in the latter 26°.

The long bones are quite normal in all respects. The tibia measures, about the centre of its shaft, antero-posteriorly 31 mm., and transversely 20 mm., giving an index of 64.5.

General Conclusions.

It is evident that in this series of skulls we have not a single pure race to deal with, but two distinct races, which have existed at probably three different periods. The first, and apparently the oldest race, seems to be the long-headed people represented by the skulls from Skerrabrae, and those of doubtful sex from Saverough. We have next the round-headed race, which probably occupied the country for a considerable time. The earliest of these are probably represented by the skulls of

¹ "Journ. Anthropol. Inst.," November, 1879.

rounder form from Saverough, and the later by the skulls from Newbigging, Rendall, and Harray.

That the skulls from Skerrabrae and the dolichocephalic skulls from Saverough are more ancient than the more brachycephalic skulls is, I think, clear. First, as regards the Saverough skulls, their small size, if we consider them as those of males, which I am inclined to do, would indicate that they are those of an early race, since there is decided proof of the size of the head having increased as time has rolled on. The maxillary portion of the face is developed more fully in these dolichocephalic skulls than in any of the more brachycephalic skulls found with them—a condition which occurs to a marked degree in low races as in Tasmanians and Australians. The condition of the bones also indicates that they are of ancient date, though too much dependence cannot be placed upon this; still, skulls subjected to the same decaying influence would, if they belonged to the same period, most probably exhibit a corresponding condition as to preservation; but in the Saverough skulls we have those of uncertain sex much more decayed than the brachycephalic skulls, which are comparatively fresh: therefore I think there can be little doubt that the one set is much older than the other. The rate of decay of bone in this tumulus would probably in any case be very slow, as the soil is composed of dry sand. That the Skerrabrae skulls are of ancient date, also, the history of the dwelling seems clearly to indicate; the only contra-indication of this being that the complete skeleton was found 3 feet above the level of the floor. The condition of one of the chambers renders it possible that the dwelling may have been attacked and partly destroyed by an enemy. Supposing this enemy to have been the round-headed race who evidently invaded the islands, the latest date we could assign to these skulls would be that of their arrival; but in the turbulent condition of society pointed out to have existed at that time by Dr. Trail, from the arrangement, as if for sentries, at the entrance to the chambers, it is quite as likely that the inhabitants of this dwelling were attacked and the building wrecked by their own race as by later comers, and probably more so. I may here remark that it would be very desirable to have this ancient dwelling of Skerrabrae more fully explored; possibly several chambers remain yet unexplored, and if the supposition is correct as to the dwelling having been attacked and destroyed by an enemy, human remains would most probably be found in the most interior chambers which have not yet been explored. Whether these Saverough skulls are older, or of about the same age as the Skerrabrae skulls, it is impossible to say. The only indication we have of the Saverough skulls being older than the Skerrabrae

ones is the fresher condition of the bones from the latter place. Both sets were buried in soil of much the same nature, but the mode of burial being different may account for the different conditions in which they are, the Saverough skulls being buried in stone cists, while the Skerrabrae ones were found in the sand, another indication, perhaps, that the owners of the latter perished in a hostile attack. In estimating the age of the two places some authorities have attached importance to the fact that no querns or hand-combs were found in Skerrabrae, while both were found in Saverough, as indicative that the former is older than the latter, and the burgs generally.

Next, regarding the skulls of rounder form from Saverough, I have placed them as earlier than the skulls from the single cists of the round barrows. My reasons for doing so are because in Saverough we have no traces of cremation having been practised, and from the total absence of more modern implements of domestic use and defence. It is true we have the history of the deer's-horn handle of some instrument with the trace of iron in it, and this is certainly difficult to account for. To throw doubt as to its being iron is an argument of a very weak character, and one which should not be resorted to; nor do we need to do so, as we have distinct proof that this tumulus was not undisturbed. I therefore am inclined to think that this handle has got into the mound at a later date, an occurrence which we find not unfrequently happens. An argument which has had some weight with me in regarding these skulls, or at least some of them, as being those of the early round-headed people, is that the burgs were evidently the strongholds in the country, an invading race would naturally seek to take possession of these in the first instance, and having done so would most likely bury their dead in close proximity to them, where the remains would be, as it were, under their eye at all times, and consequently not so liable to be disturbed by the hostile tribes as when buried in tumuli at some distance from their habitation.

At a later period, when the round-headed people were in full possession of the country, and when interment and burning the dead were practised, we have the people to whom the brachycephalic and dolichocephalic skulls found in tumuli containing single or compound cists, such as those of Newbigging, Rendall, and Harray, were found, though at this time we have both long and round skulls buried side by side. Thus we find skulls Nos. 162 and 164, those of persons of well-marked brachycephalic type, presenting characters of comparatively unmixed race, and, as far as I am able to judge by comparison of other skulls, agreeing with the type of brachycephalic people found in round

barrows throughout Britain. Quite different from these are the skulls Nos. 163 and 165, which belonged to persons of the same period, and which seem to me to exhibit traces of admixture. This is possibly what might be expected from the history of the three skulls Nos. 162, 164, and 165. The mode of burial of the first showed that he was of importance in his tribe. The second, buried along with another, a skull similar to No. 162, probably indicates that she was of the better class. These would more likely be of purer type than the lower classes, to which not unlikely No. 165 belonged. The conquered race would be more likely to intermingle with the lower classes than the upper classes of the conquerors; consequently we might expect to find mixed features amongst them—precisely what we find in No. 165, and also in No. 163. This latter, it will be remembered, was found in a short cist, which I think may have some indirect evidence, at least, as to his station in life. We find that the chiefs, both in Orkney and in the cists at Keiss, in Caithness,¹ were buried in cists measuring about 5 to 6 feet long; No. 165 was found in one only 3 feet long. No. 329, which, unfortunately, is in a very imperfect condition, closely resembles No. 165 in its physical characters, was also found in a short cist measuring 3 feet 10 inches long.

Have we any clue as to the time when these races inhabited the country? No direct answer can be given to this question, but there are certain indications of a negative character which give us some information on the point. The abundance of deer-horn found at Skerrabrae indicates that at the time when it was inhabited those animals were plentiful in the country. The presence of deer most probably would be associated with the existence of forests, of which there are many remains to be found in different parts of the island to the present day. When the Romans sailed round Scotland and visited the Orkney Islands, their historians tell us there were no forests at that time, and probably the deer had ceased to exist also. The fact that no metals of any kind whatever were found, and that all the implements were of the most primitive manufacture, points to the people belonging to the unpolished stone period. An important piece of evidence as to the antiquity of the burghs has been pointed out by Mr. Laing. At Breckness, near Stromness, there remains in the face of the cliff a part of a burgh, the rest of it having been carried away by the sea. The curvature of the remaining wall shows the burgh to have been 68 feet in external diameter; of this only 15 feet remain, upwards of 50 feet having been carried away. We must give the builders of this burgh credit for placing it at least 50 feet or more from the edge of

¹ Laing and Huxley's "Prehistoric Remains of Caithness."

the cliff; consequently here we have a wasting of the coast-line of about 100 feet, at least, since the building of the burg. The coast-line at the place where the burg is situated is shelving, so that we have to deal with absolute wearing away by slow degrees, and not with any sudden collapse of the coast. "Those who know," as Mr. Laing remarks, "the slow rate at which a solid rocky coast is washed away, must feel that such facts as are exhibited by the section of the burg and cliff at Breckness are altogether incompatible with any theory that assigns the origin of burgs to recent date. The rock on which the burg stands is not exposed to the full force of the Atlantic, being mostly sheltered from the west by a point of rock" extending farther out. "The substance of the rock is very hard and homogeneous sandstone of the Devonian formation."¹ Unfortunately we have no data by which to estimate the wasting of rock of this kind. We know, however, of castles which have stood on the brink of precipitous rocks for centuries without there being any appreciable wasting of their foundations. We have seen that the burg of Oxtro must have existed for so long a period as to admit of its ruins being covered over to a depth of some feet with soil before the people of the bronze period deposited the ashes of their dead over its ruins. It appears to me, then, that the antiquity of the Skerrabrae skulls and those from Saverough, or at least some of them, may probably be very great; but we have no means of estimating in years how old they may be.

Next, then, as regards the age of the skulls found at Rendall, Newbigging, and Harray—those found in cists in single tumuli. Here we have somewhat better data, and are able to fix their age more nearly than that of the other skulls. Those seem to have existed probably somewhat before the bronze period of this part of Britain, as I can obtain no trace of any metals having been found buried with them; but we have, according to Mr. Petrie, stone implements sometimes found in cists similar to those in which they were interred. The custom of cremating the dead is usually assigned to the bronze period, and we have clear proof that this was the common method of disposing of the dead at that period in Orkney; but we have also abundant proof that cremation was practised at a time when metals were apparently unknown, or very scarce. The round barrows found in Orkney seem to correspond exactly to those of various other parts of Britain, except that in the latter we have bronze articles found. Allowing for the isolation of these islands, and for the longer time it probably took before the metals were as common as in England, I do not think we ante-date, but probably post-date, the existence of the people

¹ Laing, "On the Age of Burghs," *loc. cit.*

who buried in the round barrows of Orkney, if we attribute them with the same antiquity as those of the round barrows of England. The date of the introduction of bronze into England has been estimated by Canon Greenwell as being somewhere about the year B.C. 1000,¹ and the same authority considers the round barrows of England to belong to a period which centres more or less in B.C. 500.

Description of Plate I.²

- Figs. 1 and 2, *Normæ frontalis et lateralis* of skull No. 346A, from Skerrabrae. Scale, one-third linear.
 „ 3 and 4, *Normæ frontalis et lateralis* of skull No. 346B, from Skerrabrae. Scale, one-third.
 „ 5 and 6, *Normæ lateralis et verticalis* of skull No. 164, from Rendall. Scale, one-third.

Professor FLOWER, Professor THANE, Mr. A. L. LEWIS, Mr. PARK HARRISON, Mr. C. ROBERTS, and Dr. J. RAE offered some remarks on the subject of the paper, and the author briefly replied.

Mr. PARK HARRISON exhibited and described a collection of photographs of inhabitants of the British Isles, which he regarded as representing the old Jutish type:—

Note on PHOTOGRAPHS of INHABITANTS of BRITAIN of JUTISH TYPE. By J. PARK HARRISON, M.A., M.R.A.S.

THE writer was struck, when paying a visit in Kent two years ago, with certain peculiarities in the physiognomy of a portion of the population round Canterbury, which he suspected might be due to Jutish blood. He consequently collected a number of photographs, and sent them to Dr. Beddoe, F.R.S., with the request that he would give his opinion on the subject. In reply, that distinguished anthropologist wrote to say that he found no difficulty in accepting the portraits as typical of the race above alluded to.

Mr. Harrison in the following year took some of the best specimens with him to the Isle of Wight, and spent several days in studying the native population in Newport and the district between that town and Ryde, which tradition says was peopled

¹ "British Barrows," p. 131 (1877).

² These photostereographs were reduced from drawings by Mr. J. G. Goodchild, the projections having been taken by the author with Bruca's stereograph.

by the Jutes. The result was that precisely the same peculiarities were detected that had been observed in Kent.

Subsequently, on instituting a search for faces of similar type in South Hants, opposite the Isle of Wight, several were met with; whilst many more were observed which sufficiently contrasted with familiar English types in that part of the country to show that the blood was mixed.

The peculiarity of the Jutish features consists in the form of the nose and mouth. There is no nasal point, or tip, properly so called, as in the Danish, Cymric, and Iberian face, and their inter-crosses; nor is there any approach to the slight bulb which distinguishes the Saxon. The end of the nose is rounded off somewhat sharply, and the septum descends considerably below the line of the nostrils. The lips are less moulded or formed, and resemble the Iberian rather than the Saxon type. The lower lip, more particularly, is thick and deep. The Jutish profile has a strong resemblance to that sculptured in the Assyrian marbles.

It should be mentioned that there is an alabaster monument in Newport Church of De Horsey, who was Captain-General of the Isle of Wight in the sixteenth century. His profile closely resembles the type still existing in the neighbourhood, and it is said to be hereditary in the De Horsey family. Now it is important to note that Dr. Isaac Taylor considers *Horsey* as the Saxon equivalent for *Horsa*, a name common amongst the Jutes. Such survival of names, when joined with physiological similarities, is of more value than is generally assigned to it, in a racial point of view.

It will be well also to bear in mind that objects are met with in early graves both in the Isle of Wight and in Kent that are not found, for instance, in Sussex, or with Saxon interments elsewhere. This would appear to accord with the conclusions we arrive at from the physiognomy of the Jutes and Saxons, namely, that their race-origin was different.

Whether the same peculiarities exist in Jutland at the present day is not known; but the population there was, there is reason to believe, not homogeneous in early times, and it is possible that the Jutes, properly so called, may have migrated with their families, in separate bodies like their neighbours the Angles. If so, this would go far to account for the perpetuation of the peculiarities of the people in this country.

In London, as might be expected from the near neighbourhood of Kent, Jutish faces may occasionally be met with in the streets.

It would be interesting to ascertain if the type exists on the East Coast of Scotland, or in the North of England.

APRIL 24TH, 1883.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the LISBON GEOGRAPHICAL SOCIETY.—Portugal and the Congo.

From the GERMAN ANTHROPOLOGICAL SOCIETY.—Correspondenz Blatt. March and April, 1883.

From the LIBRARIAN.—Report of the Mitchell Library, Glasgow, 1882.

From the AUTHOR.—Darwin and Modern Evolution. By Raphael Meldola.

— On Philography. By Andreas Gottschling.

— Ethnologische Forschungen und Studien. By Dr. Fligier.

From the ASSOCIATION.—Report of the British Association, 1882.

— Journal of the East India Association. Vol. XV, No. 1.

From the SOCIETY.—Proceedings of the Royal Geographical Society. April, 1883.

— Mittheilungen der Anthropologischen Gesellschaft in Wien. XII, Band. Hefte 3, 4.

— Proceedings of the Royal Society. No. 224.

— Bulletin de la Société de Borda, Dax. No. 1, 1883.

— Journal of the Society of Arts. Nos. 1585-1587.

From the EDITOR.—Australasian Medical Gazette. No. 17.

— Revue Scientifique. Tom. XXXI, Nos. 14-16.

— Revue Politique et Littéraire. Tom. XXXI, Nos. 14-16.

— Revue d'Anthropologie. No. 2, 1883.

— "Nature." Nos. 701-703.

The election of CHARLES ROBERTS, Esq., F.R.C.S., was announced.

The following paper was read by the author:—

On the MECHANICAL METHODS of the ANCIENT EGYPTIANS.

By W. M. FLINDERS PETRIE, Esq.

[WITH PLATE II.]

THOUGH so much labour has been bestowed on the literary remains of the Egyptians, and there are now so many scholars who can read an inscription with ease, yet not a single student

appears to have given his attention to the mechanical evidences of ancient knowledge and skill. Beyond cursory remarks on the wall paintings that show technical subjects—such remarks as any intelligent traveller might make—nothing has been written on the methods by which such marvellous results of skill and labour were produced. The latest writer—Brugsch, in his "*History of Egypt*"—says of the great diorite statue of Khafra, "Unacquainted with the hardness of steel, and the marvellous action of those instruments which in our day scarcely allow the artist to feel the trouble of rough work, that primitive race knew how to conquer the resistance of the hard stone, and to animate a lifeless mass with the spirit and expression of life. No master of modern times is capable of giving an answer to the question, how they managed to overcome the difficulties of the unyielding substance" (vol. i, p. 97, English edition). Such then is our present lack of knowledge on the subject; and it was a question of special interest to me, while living at Gizeh, surrounded by the finest examples of architecture and masonry, to obtain such information and collect such specimens as might help to answer this most interesting inquiry. Most of the illustrations of work here exhibited or described are drawn from the earliest sources, the pyramids, temples, and tombs, of the fourth dynasty, constructed some time before 2400 B.C.; and later works are only quoted as additional instances of methods already known in the earlier times.

The principal result of the examination of these remains is the discovery that the stone cutting was performed by means of graving points far harder than the material to be cut; and that as the stones operated on were quartz, or mixtures containing quartz, the graving points must have been therefore of some jewel harder than quartz; since no metal, not even the hardest tempered steel, or osmiridium, is capable of cutting quartz, apart from a mere bruising action. These cutting points are found to have been bedded in a basis of bronze, in order to hold them in the right position, and move them with the requisite force.

This essential principle—that the cutting action was not by grinding with a powder, as in a lapidary's wheel, but by graving with a fixed point, as in a planing machine—must be clearly settled before any sound ideas of the methods or materials can be arrived at; and I would therefore first of all direct your attention to those examples which give the most distinct evidence on this point.

First, we have a circular piece of granite, grooved round and round by a graving point; the grooves here are continuous, forming a spiral; and in one part a single groove may be traced around the piece for the length of five rotations, equal to 3 feet;

even at the ends of this groove there is no sensible difference in its character, as if the cutting point had begun to fail; but merely owing to irregular action of the tool, the grooves become confused and cannot be individually traced further.

Another piece is part of a drill hole in diorite. This has been part of a hole $4\frac{1}{2}$ inches diameter, or 14 inches circumference; as seventeen equi-distant grooves appear to be due to successive rotations of the same cutting point, we have here a single cut 20 feet in length.

Another piece of diorite shows a series of grooves, each ploughed out to a depth of over $\frac{1}{100}$ inch at a single cut, without any irregularity or starting of the tool.

Other pieces of diorite show similarly the regular equi-distant grooves of the saw, repeated in a manner which proves that the graving point travelled for at least many yards through the material, without any appreciable alteration in its sharpness.

Collateral evidence is also given by two pieces of diorite-bowls with portions of inscriptions. These hieroglyphs are evidently chased with a cut of a graving point, and are neither scraped out by repeated rubbings, nor ground out by a wheel; these specimens bear, one the name of Senofru, the earliest king of whom any remains are known, and the other the standard of Khufu, his successor, and builder of the Great Pyramid. Both are undoubtedly genuine fragments, as I picked them up from the vast number of such chips which strew the ground at Gizeh.

Now looking at these examples of work,—at the depth of the grooves graved out by a single point, and the enormous strain thrown on a cutting edge in ploughing out $\frac{1}{100}$ inch thick of quartz at a single cut,—and looking to the length of the grooves produced by a single point, which cut through at least many yards of quartz without any appreciable wear, it may be safely said (after examining specimens of modern work in such materials) that it is impossible for such results to have been produced by any means, except by jewel points far harder than quartz, set in a bed so that every point shall individually do its work in ploughing out the material. Another evidence of this is seen on the granite core; there the cutting point, which can be traced, has passed through quartz, felspar, hornblende, and mica, without the least interruption; and when we consider the strain thrown on a cutting point in suddenly passing from a soft material to a patch of far harder nature, it is evident that not only must the separate cutting points have been each fixed in rigid setting, but that the setting must have been made with great skill and care to prevent the stones from being wrenched out of it, or crushed in it, by the sudden strain.

If examples of work done by any grinding process be examined, it will be seen that there is not a trace of the definite grooves such as we see here. On modern lapidaries' work, done by a wheel fed with loose diamond powder, numerous shifts in the plane of the cut may be seen, showing the outline of the wheel; but no grooves or definite ploughings in the material, produced by individual points of diamond. Similarly on the tubular drillings done with soft iron and sand by the Chinese, or the work of many other nations who are accustomed to cut stones by means of a soft metal fed with a harder powder,—on none of these that I have ever seen is there any trace of ploughing out of the material; and, indeed, it seems physically impossible that any particle of a loose powder could become so imbedded in a soft metal by the mere accidents of rubbing that it could bear the immense strain, probably of some hundred-weights, needed to plough out a groove of any considerable depth in such a hard material as quartz.

This systematic use of jewel points set in some basis may therefore be considered as proved by the existing work; and from finding that the loose sand left in a cut (and also the sides of some of the cuts) are stained green, we may conclude that the metal of the setting was bronze.

What the jewels were that the Egyptians used for these stone-cutting tools is not yet known. In some of the dust left in a saw-cut, perhaps some recognisable chips might be found. Indeed, I picked out one microscopic chip, with which I scratched a quartz crystal easily. But Professor Maskelyne has not succeeded by chemical separation in obtaining any recognisable fragments. The range of possible materials is limited to but five minerals: beryl or emerald, topaz, chrysoberyl, sapphire, and diamond. Of these I have experimented with beryl and sapphire, and the deepest scratches that I could make with either of these stones on diorite are barely perceptible, not $\frac{1}{16}$ of the depth of ancient cuts on the same piece. With greater pressure the edges of the jewels crushed and crumbled without making any deeper cut. My own conclusion, therefore, is in favour of diamond having been used, though the evidence is not distinct enough to press such an opinion. Diamond is not known as a gem in Egyptian antiquities until Græco-Roman times; but as it is colourless and unpolishable, there would be nothing to recommend it to Egyptian taste, which always chose the brightest colours. Hence it might be known as a stone for use, though not for ornament; and I understand from Mr. Boscawen, that the early Babylonian inscriptions mention the "piercing stone," a name known to be employed for the diamond in later times; so that the very early

statues in diorite lately found in Babylonia, which are of the finest work (like the splendid diorite work of the earliest Egyptians) may have been very possibly graved with diamond.

Next we will consider the forms of the tools used. The simplest tool of all was the straight bronze saw, set with jewels. This must have been in some instances over 8 feet in length, since the grooves run lengthways on the side of the Great Pyramid coffer, which is 7 feet 6 inches long, and some length of stroke must also be allowed for. The thickness of the saw naturally varied with the magnitude of the work. For the heaviest work, as on large blocks of basalt, the saw was $\frac{2}{10}$ inch wide; on a piece of statuary work in syenite it seems to have been $\frac{1}{4}$ inch wide; and on a small syenite trinket it was not more than $\frac{1}{32}$ inch wide. There are several examples of sawing here in grey syenite, casts from red granite, in diorite, in basalt, and in limestone. The granite coffins of the Great and Second Pyramids both retain traces of their having been sawn into shape on the outside; and Howard Vyse reports the same of the basalt coffin of the Third Pyramid, unhappily lost at sea. The largest work of sawing that I have seen in the great basalt pavement, on the east of the Great Pyramid, 1,800 square yards in area, and containing a somewhat larger number of blocks; all these blocks appear to have been sawn, and were finely finished off on the upper surface. Probably the casing blocks of the pyramids were also sawn, as I have found many slices of sawn limestone lying about; but the blocks were all pick-dressed afterwards, so that no sawing marks remain on them. It is difficult to be certain of the age of sawn limestone, as the Arabs doubtless sawed limestone freely when cutting up the casing for Sultan Hassan's mosque; but the examples of limestone here, from their locality or condition, are certainly ancient.

Another form of saw, of which there is but one proof, is a circular saw; this must have been $6\frac{1}{2}$ inches diameter, used for slicing small pieces of diorite. The marks produced by the most prominent cutting point at one side of the edge of it still remain on one face of the piece of diorite here, though the surface has been polished. It has been suggested that these marks are due to a series of jewels set on a flat rotating face, for planing down the flat bottom of a dish; but, besides the facts that no flat-bottomed dishes are known, and that the polishing lines cross the surface in all directions, it would need far greater skill to set a row of stones on a face to so exactly the same level as to make such marks, than to set them on an edge for slicing. So the simplest explanation of this piece is that a circular saw was used.

Though sawing was thus freely used for cutting the outsides

of the great granite and basalt coffins, some other means were requisite for hollowing the insides of such vessels. Here the inventive genius of the fourth dynasty exactly anticipated modern devices, by adopting tubular drills, as the readiest and cleanest way of removing material with the least waste of force. These tubular drills varied much in diameter, thickness, and length. The smallest is one used in alabaster only $\cdot 24$ inch diameter, and $\cdot 02$ inch thick. Other examples of small cores in alabaster vary up to $\cdot 52$ inch diameter; a beautiful example of a mortar, the hollowing which had been begun with a tube drill, and which had been broken and thrown away, shows a drill $\cdot 7$ inch outside diameter and probably $\cdot 04$ inch wide. A hole in a basalt vessel is $1\cdot 8$ inch diameter. A core in limestone shows a hole $1\cdot 9$ inch diameter. A tubular drill hole in a lintel of the granite temple of Khafra, at Gizeh, is $2\cdot 2$ inches diameter, and the thickness of the drill $\cdot 1$ inch at the end: this is a particularly brilliant illustration of the form of the drill, as the core being in a tough patch of hornblende in the syenite would not break out, and hence a stump $\cdot 8$ inch long still remains in the hole. This is the S. pivot hole of the doorway leading to the chamber with niches. The fine granite core, on which continuous grooves can be traced, is $2\cdot 2$ inches diameter; it was found at Gizeh, and is probably of the fourth dynasty. Pieces of alabaster cores from Gizeh are $2\cdot 5$ and $2\cdot 8$ inches diameter; and one of them shows the interference of the side of another drill hole cutting into it. The drill used in hollowing out the granite coffin in the Great Pyramid was $4\cdot 2$ inches diameter, as we find by two places in which the drill was allowed to run too deep into the side; and as the bottoms of these holes are $7\cdot 7$ and $8\cdot 4$ inches below the top of the block, this probably shows the length of the drill used to be about two diameters. A piece of granite coffin here has a trace of a drill hole $6\cdot 6$ inches long. A piece of greenstone waste was found with traces of three drill holes upon it, each $4\cdot 5$ inches diameter; this is a very interesting piece, as it is one of the class of rude stone implements found at Gizeh; from other examples I had concluded these to be all of Ptolemaic times, and this specimen effectually prevents their being attributed to a pre-pyramid period. Two holes conjoined, in limestone, are $4\cdot 8$ inches diameter, and show how closely holes were placed together for hollowing out masses; these drill holes must have just overlapped by about the thickness of the drill, so that the greatest economy of labour was attained by using as much of the previous cut as possible, without scooping out any of the core of the previous hole. A piece of diorite waste shows a hole $4\cdot 8$ inches diameter, with remarkably clean cut grooves ploughed out by the outermost cutting point.

Besides all these hand specimens, there is at El Bersheh a case on a far larger scale; unfortunately many things to be examined there, in a short hour or two, left me no time to examine this carefully. The rock there required to be largely cut away to afford a platform in front of some tombs of the twelfth dynasty; and all over the platform the surface is apparently covered with the circular grooves of large tubular drills about 18 inches diameter. I cleared the rubbish out of one of the grooves, and found that it had a smooth bottom, and was ploughed out by continuous motion, and not chipped; this cutting might be supposed to result from trimming out drums of columns in the rock; but the surfaces inside as well as outside the circular grooves were rough broken, and not sawn across, and in one place I found the grooves actually intersecting, where it was not required to remove the full size of a drill hole. Hence it seems almost certain that the tubular drill principle, of which examples are here before us, from $\frac{1}{4}$ inch to nearly 5 inches in diameter, was carried on still further into sizes suitable for removing rock on a large scale,—sizes which must have needed several men to turn the capstan head of the drill. Other examples of tubular drilling I have observed on the ornamentation of the alabaster of the palace of Rameses III at Tel el Yahondiyeh, of the twentieth dynasty, in the British Museum; and on the great diorite statue of Khafra of the fourth dynasty, found at Gizeh: on the latter there is the end of a tube drill hole, 1.5 inch diameter, just between the feet, showing that the space between the legs had been roughed out by running a drill hole down there. Tube drills were also in constant use for beginning the hollowing out of the great diorite bowls, to remove the material from the axis more quickly and easily than could be done by turning on the lathe alone; the proof of this is seen in the circular groove in the inside of most of these bowls; it is here seen in a piece of black diorite bowl from Sak-hara, and in a piece of white diorite bowl from Gizeh. It might be thought that this line was only an ornament, and on some examples it is clearly an added ornament, as it is graved out irregularly; but the type originated in the bottom of the drill hole not having been cut away in turning the bowl, as may be seen on the piece from Gizeh, where the groove clearly does not belong to the same centering as the turning, but falls off altogether into the regular curve on one side. These tube drill holes were also used in hollowing more upright vessels, as may be seen from the bottom of a drill hole showing in the portions of turned basalt and alabaster cups of the pyramid period from Gizeh. Probably the vases, which have a hole through the bottom for ease of turning out the hollow, afterwards

plugged up, were begun in the rough with a tube drill hole right through the block.

A peculiar feature of all the cores and holes made by these tubular drills is a certain amount of tapering always to be found. This tapering cannot have been produced by the mere rubbing of the side of the drill in turning round in the hole, since, not only would such a cause be quite inadequate, but the grooves ploughed out by the cutting points are just as distinct on the sides of the hole or core where it is tapered, as at the lower part. Hence it seems that not only did the Egyptians set cutting jewels round the edge of the drill tube, as in our modern diamond crown drills, but that they also set cutting stones in the sides of the tube, both inside and out. Thus the hole was continually rimmed larger by the tool, and the core turned down smaller, as the cutting proceeded; and this enabled the tool to be withdrawn the more readily from the groove, as the space is thus wider at the top than it is at the bottom.

Other drills, not tubular, were used for very small holes, such as those in the symbolic eyes here, which are drilled in syenite, 1/2 inch long, though only .08 inch diameter.

A point that should be noticed in the use both of saws and of tubular drills is the immense pressure that must have been applied to make the cutting points bite so deeply into the stone, and cut the stuff away so rapidly. The grooves $\frac{1}{16}$ inch deep in quartz must need a pressure on the point of much over a hundredweight; since a pressure of about 10 lbs. does not cut scratches $\frac{1}{16}$ of the depth of these, to say nothing of the material removed in the breadth of the groove. If, then, each cutting point on the saw or drill had a pressure on it of a hundredweight at the very least, and there were probably at least ten points occupied in making the whole breadth of the cut of the saw, this would show that the minimum pressure of at least half a ton must have been applied; and it would seem more likely that two or three tons would be the working load on one of the 4-inch drills cutting in granite. What, also, shows this enormous pressure is the rapidity with which the tool sunk into the stone. We do not know the length of stroke of the saw, but in a drill hole, or still better on a drill core, the exact length of stroke can be seen. On the granite core here the grooves are a double spiral, showing that they were made by two stones on opposite sides of the tube; and the pitch of the thread is $\frac{1}{4}$ inch, the circumference of the core under 7 inches, and therefore the rate of sinking the cutting was $\frac{1}{8}$ of the distance travelled by the tool. If we only imagine sawing a block of wood 7 inches thick, cut with a saw making 1-foot strokes, it would be thought quick work to cut

down 1 inch in seven strokes in any but the softest wood. Yet this is the Egyptian rate of cutting, or tearing through, the hardest blocks of stone known, diorite and granite. The wonder is how any bronze tube or saw-blade could bear the requisite pressure without doubling up, and how the jewels could be set in any sockets to support them against such a violent drag.

Not only was a rotating tool employed, but the further idea of rotating the work and fixing the tool was also familiar to the earliest Egyptians. The fragments of bowls turned in diorite, which are here, will show this. One piece of the bottom of a bowl shows the characteristic mark of turning; not only are there the circular grooves of the tool (showing it to have been a jewel point, as on the saws and drills), but also the mark of two different centerings: this shows that the work was knocked off its centre by the force of turning, and afterwards reset; in such a case it is impossible to hit the old centering accurately, and we have here that trouble, that every turner knows so well, of the cuts on the new centering not running smoothly into the others, but meeting at an awkward break in the surface, and so forming a cusp of the curves on the two different centres. Other specimens of turning in black granite, basalt, and alabaster, all of the pyramid period, are also here. The finest examples of turning in hard stone are in the British Museum. A small, highly polished, narrow-necked vase in diorite, or rather in transparent quartz, with veins of hornblende, has its neck only $\cdot 05$ inch thick. A large vase of syenite is turned, inside and out, remarkably thin, considering the size of the component crystals. But the greatest triumph is a bowl of diorite (No. 4716), translucent and full of minute flaws, which must render it very brittle; yet this bowl, 6 inches diameter, is only $\frac{1}{16}$ inch ($\cdot 024$) thick over its greatest part; just around the edge it is thicker, in order to strengthen it, but a small chip broken out of the body of it shows its extraordinary thinness, no stouter than thin card. An alabaster vase, of Unas of the fifth dynasty, almost rivals this in thinness, being only $\frac{1}{16}$ to $\frac{1}{8}$ inch thick; but the softness of the material makes it of far less interest. A very favourite plan for narrow-necked vessels was to turn them in two or three parts, and join them together, sometimes finishing off the inside on a fresh centering on the lathe. For this finishing, and also for hollowing out vessels in one piece, a hook tool must have been used. The brown limestone vase here is an example of this. This vase, and also the alabaster vase here, are probably of Greek date: the alabaster is of a minimum thickness of $\cdot 07$ inch in the neck and $\cdot 12$ inch in the body. Both these vases illustrate the curious idea of employing turning to hollow out a uniform inside, while the outside

was finished by hand. The reason of this where a handle had to be left in cutting is obvious, but this system seems strange in vases with uniform circular outsides. The familiarity of the Egyptians with turning in later times is shown on the abundant copper coinage of the Ptolemies; every blank has been turned after its casting, to leave a clean face for striking; the two centre punch marks may be seen on every coin, and on many specimens (such as those here) the marks of the turning are also visible.

For the use of a hook tool in turning the insides of vases, a very rigid rest, or even a mechanical tool-holder, is almost necessary; but one specimen here shows that the early Egyptians were already familiar, not only with lathes and jewelled turning tools, but with mechanical tool rests, and sweeping regular arcs in cutting. The diorite bowl, of which this piece is a fragment, has been turned as a segment of a sphere inside, by a tool working from a fixed centre in the axis of the lathe, with a radius of 3.94 inches. Having cut this spherical curve, the centre of play of the tool was shifted about .5 inch higher, and .7 inch out of the lathe axis; and a fresh arc was struck from this centre on the bowl, thereby cutting out a fresh curve which left a raised lip around the edge. The proofs of this explanation of the process are found in the exact equality of the two curves—that of the bowl in general, and that under the lip—in the fact of the principal surface exactly falling in with the inner edge of the lip, in the fact of the true circularity of the section of these curves, and in the cusp formed where they meet, an awkwardness which no hand-turner could ever take the trouble to make, but which necessarily results from a sudden change in the centre of the arc of the tool. All these details have been worked out from very careful measurements of this piece, using successive templates of slightly varying curves, to measure the exact curvature, &c.

For the intricate work of the statuary, the straight lines and uniform curves of saws and drills are only available in roughing out the work. The statue in diorite of King Khafra shows us some further details; where the legs join the front of the throne there is a groove running along the irregular curve of the calf of the leg—a groove which has been cut too deep into the throne, and left as a mistake. This shows that a hand-graving tool was used to score out the varying curves of the limbs in the block, and so to detach a layer or coat of stone from off the intended form of the figure. This is a process worthy of the men who hollowed out their granite coffins, by rows of tube drill holes; like a modern carpenter's hollowing a block of wood, by centre-bit holes. The effect of this same graving tool, worked by hand,

is seen between the fingers and toes of the figure; the grooves it cut are 15 inch wide, and are often run too deeply into the stone, thus revealing the method. Much of the work was hammer-dressed and then polished down; the hieroglyphs are apparently all done by picking, though in small hieroglyphs, as we have seen, a graving point was used to cut the lines.

Before leaving the question of the forms of tools, we may note that in the tombs of the fourth and fifth dynasties carpenters are represented using saws (always curved along the cutting edge), mallets, and chisels, two forms of adzes, and the bow-drill. Their hands always grasp tools with a clench of the whole hand, and not between thumb and finger, although the scribes always hold a pen as we do.

Besides sawing, hammer-dressing was largely used; and in some cases (as in the King's Chamber and Antechamber of the Great Pyramid) the saw was used to mark out the work; grooves were cut about half an inch deep around a block, and then the hammer-dresser was left to trim it down to the plane of the grooves. Also on sawn blocks, the surfaces to be placed in contact were usually hammer-dressed, to leave sufficient space to hold the cement, while just around the edges of the surfaces they were left quite smooth. Hence the stones would be in contact, and the joint quite microscopical on the outside, while there was a fair thickness of cement on extremely roughened surfaces inside the joint. This may be seen here on two specimens of basalt, and one of diorite.

For dressing surfaces truly flat, the regular custom of the workmen was to use a trial plate, or facing plate, prepared as a true plane, and smeared with red ochre. Wherever the ochre came off on the stone, they knew that there was an excess, and accordingly picked it away. The tool used appears to have been a sort of small adze, with which the stone was sliced down, very delicately and regularly, by hand. All the blocks of the Great Pyramid casing were prepared with these facing plates, as may be seen by the remaining touches of ochre on all the prominent points. Not only on building stones, but on rock dressing the same ochreing is visible; on the floor of the south-west socket of the great pyramid, and also on the sides of rock tombs. Where the stone was much larger than the facing plate, as was the block of granite over the King's Chamber doorway, about 8 feet \times 12 feet in area, there a diagonal draft was cut along the stone, from corner to corner, and thus any wind in the plane of the face was avoided.

In the existing casing stones, the average thickness of the joints, 6 feet in length and 35 square feet in area, is only $\frac{1}{8}$ inch; and this shows that the straightness and squareness

of the surfaces must be true to $\frac{1}{100}$ inch on an average. The levelling of the stones is equally fine, the average variation being only $\frac{1}{10}$ inch over about 100 square feet area, and only differing $\frac{1}{10}$ inch at a distance of 40 feet. Such results could not be obtained by plumb-line and square, and it is only by water-levelling on still days that such accuracy could be realised. In a painting at Thebes, the workmen are apparently shown chiselling down a plane face to a stone; they have a string stretched quite clear of the stone, over two offset blocks, one at each side, and on their applying an offset piece to the face of the stone they see whether the face is in excess; this is a beautiful method of work, as the excess does not bulge out the string, but can be exactly measured as they proceed, and also the string is not removed while working, as the chisel can be used beneath it, and so each stroke can be quickly tested as they proceed. The face on which they work is placed vertical, so that no bellying of the string will cause inaccuracy. The string is applied both diagonally and parallel to the sides, so as to observe any winding in the plane.

In the use of plaster the Egyptians were very free. This is shown in the flaws in the pillars of the granite temple, in the roof of the King's Chamber, and the Antechamber in the Great Pyramid, and in the granite passage of the Second Pyramid; all these are filled with plaster, which is tinted red, so that it should not show. The plaster is often, perhaps generally, laid on with the fingers; the grain of the skin even can be seen on plastering in the angle of the King's Chamber roof; but the flat surfaces were smoothed by a flat tool. The great freedom in the use of plaster probably arose from the necessity of using it to fill the flaws in the rock-cut tombs: a large flaw was usually cut smooth, and filled in with blocks of stone inserted; but smaller flaws were filled with plaster, often of far greater durability than the stone itself, some of the hieroglyphs on plaster in the tombs at Giseh being as sharp as when first moulded.

For marking out their work the Egyptians generally used red ochre paint; just such as is daubed on all the boxes sent by railway at this day, in lieu of paper labels. In cutting a passage in the rock, a rough driftway was first run: the roof of it was trimmed, an axial line in red was marked on the roof, and the sides trimmed to gauge from the axial line. On the sides of the forty-three granite beams (averaging 50 tons weight each), which roof the King's Chamber, and the spaces above that, the workmen's lines may be seen marked in red about $\frac{1}{2}$ inch wide; these are usually—(1) a line at some definite distance from the dressed face, from which the dressing was gauged; (2) a mid-line at half the length of the beam; (3) a line near each end

showing where it should be placed on the supporting walls; (4) a line 1 cubit from each end, by which the lines of support could be measured off in case they were defaced; and (5) smaller lines in black, about $\frac{1}{8}$ inch wide, marked on the red in some parts, to give more definite points of reference. Thus we see that, besides marking out the work in the usual modern way, the workmen were careful to supply lines which were not to be cut away or hidden in course of work; from which offsets could be taken, so as to see that they had not overshot the mark in their cutting or placing of the stones. In lining a rock-tomb with fine stone, each course was not gauged to uniform thickness before it was built in; but after laying it, a red line, at the level of the top of the lowest stone, was run around the chamber, to mark where the dressing down was to take place.

In laying the rough stones of the mass of the masonry of the pyramids one on the other, a very curious system was adopted of sinking the irregularities of the stones of each course into those of the course below them; thus each course bears on it a sort of plan, sunk on it to different levels, showing all the stones that come above it. This was also the arrangement in fitting masonry on a rock-bed, as in laying the causeway of the granite temple, and in fitting fine lining of granite, limestone, &c., against a wall of megalithic blocks.

For such a system to be carried out in pyramid building, it became requisite to plan all the courses on the ground before they were carried up and built into place; and this was certainly the method, as on all the blocks of casing stone may be seen lines showing where the edge of the stone above it was to come; the meaning of these lines may be seen on the blocks of core masonry, where they will be found always to mark the edge of the superincumbent stone. The same planning of the work also took place for all the internal chambers, as on the roofing blocks of the highest space over the King's Chamber may be seen many of the numbers of the blocks in consecutive order. The casing of the pyramid was cut to angle before it was built in, as there is a difference of 4', or .09 inch on their length, in two adjacent blocks. In the Third Pyramid the granite casing has been left in the rough on the face, to be dressed down afterwards; so the rule on this point does not appear constant.

The method of fine dressing all the limestone was not by grinding, but by very careful picking, as if with a small adze; this enabled the flatness of the work to be tested by the trial-planes as it went on; and the usual standard of flatness appears to have been that no space more than a couple of inches across should miss touching the true plane, within the thickness of the smear of ochre; usually the ochreing is found on points not

over an inch apart. The surfaces of the chambers of the pyramids, which are built of limestone, were probably finished off after building, as on the walls of the gallery pickmarks of the dressing may be seen across a joint. In the granite temple the stones were apparently built with a rough excess left on the face, like that on the granite casing of the Third Pyramid, only 1 or 2 inches thick in place of 6 or 8 inches. This excess was afterwards dressed away in finishing the face, as then was produced the curious appearance of each stone running a little way round the corner of the chamber, or the corner being cut out in the solid stone.

On the methods of quarrying I can only speak of limestone, as I had not the advantage of seeing the sandstone or granite quarries. At the great quarries of Turra and Masara, on the opposite side of the Nile to the pyramids, there was a regular system of work. A square gallery was run into a good stratum of rock, the gallery being about 20 feet square. Similar galleries were run parallel with each other, leaving an equal space of rock between them; then cross galleries were cut, and so the whole space was reduced to an enormous hall, 300 or 400 feet wide, the roof of which was supported by rows of pillars about 20 feet apart, and each 20 feet square. Disused parts of the hall were filled up with the waste chips. Such halls do not necessarily show on the outside of the cliff, as they may have but a single opening, and be almost entirely in darkness inside. To excavate these regular galleries, the workman—cutting a row of foot-holes, by which to ascend to the top of the gallery—there excavated a recess the width of the gallery, the depth back of the one block of stone to be removed, and high enough for him to lie upon. Then cutting a groove downward behind the intended block, while others cut grooves horizontally inwards from the face, and vertically along the gallery sides, the block was at length liberated from the rock, and ready to be removed on an ox sledge down the causeways, which descended to the plain below. For merely hollowing away rock which was not required for use, grooves were cut wide enough to stand in, and then cross grooves, by which at length the blocks could be broken out. This is seen in the subterranean chamber of the Great Pyramid, and the cutting around the Second Pyramid. In the open-air quarries at Nezlet esh Shekh Hassan, the system was rather different. There the fissures in the limestone were untouched, as the sides of them were inferior stone; and the quarrymen actually left all the fissures, as it were, enclosed in a wall of rock, standing like a honeycomb all over the hill. It is possible to walk a long way on the tops of the fissure-walls, looking down into the workings 20 or 30 feet below. They

even cut foot-holes to descend into a space where good stone could be obtained, and must have hauled up the blocks out of the pit they excavated, until the approach of other pits, and workings between the fissures, enabled them to cut a gap about 6 feet wide, straight down the fissure-wall, and so get easy access to the bottom of the place which they had sunk to such a depth.

Granite was, in the pyramid times, often obtained from boulders taken from the bed of the Nile: all the casing of the Third Pyramid, and some stones in the Great Pyramid, showing this. But other and larger pieces, such as the beams over the King's Chamber, and over the granite chamber in the Third Pyramid, were quarried; and in order to determine the plane of fracture, not only was a groove cut along the surface, but holes were roughly drilled at every couple of feet right through the mass; the halves of these holes on the tops of the blocks may still be seen.

For moving the stones readily, without bruising their edges, lugs were left projecting from the surface, which was otherwise dressed flat; these lugs were knocked off after the stone was in its place, and the remainder of the surface was polished down. They may be found remaining on the walls of the spaces over the King's Chamber, and their traces may be found on the walls of the chamber itself. A cast of one shallow lug, from the granite leaf in the Antechamber, is before you; and I picked up a large broken-off lug on the hill of Gizeh. Another plan, when the block was not yet faced down, as on the granite casing of the Third Pyramid, was to cut hollows in the rough excess of the stone, to get the ends of levers under it; hollows were also cut in the lower edges of rough backing stones, as in those of the Mastaba el Firaun of King Unas at Sakkara.

The method of raising such immense blocks is not known, except by inference. Considering that undoubtedly the easiest way would be by rocking the block, and so alternately raising two piles near the middle of it, and that Herodotus says that machines composed of short pieces of wood were used, there is little reason to doubt this explanation given by Howard Vyse. But something beyond brute force was employed, as, for instance, in placing the lower granite portcullis of the Second Pyramid; there a block, which would need forty or sixty men to lift it, was slid on its edge along a passage only $3\frac{1}{2}$ feet wide; and then slewed round in a complex way, so as to turn it up into the grooves prepared in the rock for it to slide in. Not more than four men could well work at it, and they in a cramped space; and hence some great advantage of leverage, skilfully applied, must have been available.

Finally we will briefly notice the system of organisation that appears to have been required in the enormous works of the Egyptians. The prodigality of labour shown in their buildings has often drawn reproaches on their inhumanity and folly, from modern writers who have never lived in the country. But to any one who sees that during a quarter or a third of the year all agricultural labour is absolutely at an end, by reason of the inundation, and that the modern people merely idle away their time in enforced business, it may rather seem that to organise and train a small proportion of the effective labourers of the country in regular work during that time was really a great benefit to the national character. To require a man every six years to serve on the public works, during the season when he could do nothing else, would certainly not be a great hardship, and such a system of levying would suffice to build the Great Pyramid entirely in the twenty years which Herodotus states, without anything beyond easy, steady labour. When we consider that all the transportation of stone for the great buildings which cover Egypt must have been done during the season of High Nile, when water-carriage was to be had directly from the quarries to the site on the margin of the desert, the special utility of labour on such works during the inundation is plain. And we have an historical notice of this system by Herodotus who states that the levies for the building of the Great Pyramid only worked for three months at a time. Thus it was by the natural and obvious system of employing a fraction of the population, during the season when all ordinary labour was at a standstill, that the Egyptians were so readily able to command such an immense amount of force as was requisite to carry out their great conceptions.

POSTSCRIPT.

In consequence of the remarks made on the granite core, I have examined it more carefully. It offers apparently a complete proof that the lines were cut by fixed points, and not by the rubbing of a loose powder; for the grooves are cut as deeply in the quartz as in the felspar. And the felspar being somewhat rubbed down, by general friction, the lines are actually cut through a greater thickness in the harder quartz, which stands above the felspar. Now no loose powder could cut down exactly to the same depth in materials different in hardness, like quartz and felspar; still less would it cut more out of the slightly more prominent quartz; but a fixed point must cut to the same depth in each material.

The spiral was described as a "drunk screw"; I therefore traced very carefully a normal plane, at right angles to its axis,

and measured off the distances to the spiral: they are thus, at successive quarter turns, in inches:—

		Quarter turns.				First repeated.
Turn 1	..	3.14	3.11	3.07	3.08	3.06
" 2	..	3.06	3.03	2.99	2.97	2.95
" 3	..	2.95	2.94	2.91	2.87	2.83
" 4	..	2.83	2.82	2.80	2.77	2.76
Mean		2.995	2.975	2.942	2.922	2.900

Here, if there were any "drink" in the screw, it would appear as an irregularity in the order of the means of such quarter; whereas they proceed as regularly as the small variations due to texture, will permit. There is not $\frac{1}{160}$ inch irregularity in the mean spiral, though the pitch is $\frac{1}{16}$ inch.

The spiral could not be produced by the mere withdrawal of the tool, as it is too deeply cut to have been made without great force; and it is wholly unlikely that a tool should be withdrawn with such regularity. Again, as there would be from $\frac{1}{16}$ to $\frac{3}{16}$ inch of loose dust between the tool and the tapered end of the core, the cutting points of the crown would not reach it in withdrawal; and if they did so accidentally they would not touch the core in a continuous line all round, but only on one side.

That there are lines on modern drill cores is not to the point. Those cores are not tapered, and hence the lines can there be produced by the crown.

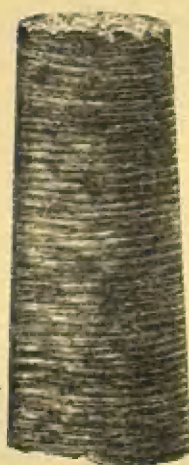
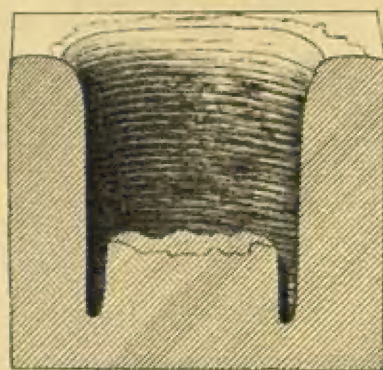
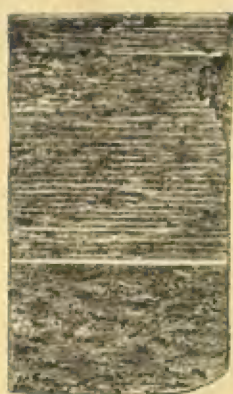
On examination it seems most probable to me that the coning was not due to stones set with different projections from the drill side, but rather by a row of stones up the side projecting uniformly. Then when the top weight was tilted over to one side, or did not balance truly on the drill head, it would drag the drill over, and thus make it enlarge the hole and taper the core, as it cut downwards.

An engineer present has remarked to me that the manufacture of hammers good enough to dress down granite on such a very large scale, as in the Great and Third Pyramids, implies almost as much skill as any other method of dressing the stones.

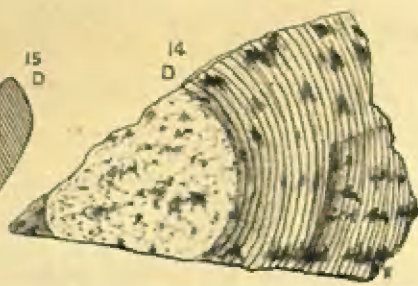
The result, then, of a much closer examination of the specimens, is to confirm the conclusions as to the method and quickness of working stated in this paper.

The diorite statues of Goudea (before 1500 B.C.), lately brought from Chaldea to the Louvre by M. de Sarzec, show traces of being



All half actual size.

15 D



wrought by similar tools to those here described. Between the feet of the largest statue are the bottoms of four tube drill holes $1\frac{1}{2}$ inch diameter; the groove is $\frac{1}{8}$ inch wide, and the core still projects about .08 in one hole. On another statue are five tube drill holes, .8 inch diameter, with grooves $\frac{1}{8}$ inch wide. There are no traces of lines on the sides of the holes, so they might have been done by a loose powder; but on a diorite fragment in one of the cases are very regular equidistant lines, which, though but slight, are yet far too uniform and sharply cut not to have been made by fixed points regularly advancing, as in tubular and drill work. There is also a piece of a well-turned bowl in lime-stone. Hand-graving tools were largely employed on the figures; the long inscriptions, the fringe of the garments, the divisions on the architect's plotting scales, and the cutting between the fingers and toes, were all done in the diorite by a cutting or scraping tool, and not by hammer and chisel. There is no trace of sawing at present visible on the statues.

The granite shrine of Ahmes (twenty-sixth dynasty), also in the Louvre, shows in the pivot-holes that tube-drilling was used as late as that period by the Egyptians.

Description of Plate II.¹

- Fig. 1. Sawing in granite, end of Great Pyramid coffer. Saw run too deep, twice over.
- " 2. Sawing in granite, with saw-cut across the block. Found at Memphis.
- " 3. Sawing in basalt; part of basalt pavement of $\frac{1}{2}$ acre area at Gizeh, thus sawn.
- " 4. Sawing in basalt; same locality, showing lines of cutting well.
- " 5. Sawing in basalt; same locality, showing breadth of saw, cut into a slice sawn on both sides.
- " 6. Circular sawing in diorite. Found at Gizeh.
- " 7. Core of a tube drill hole in granite, showing deep cut spiral lines. Found at Gizeh.
- " 8. Section of tube drill hole in granite, showing core still in hole. Cast from Gizeh.
- " 9. Tube drill hole for hollowing alabaster mortar; broken in the making. Found at Kom Ahmar.
- " 10. Core of a tube drill hole in alabaster. The smallest known. Found at Memphis.
- " 11. Tube drill holes in an eye in marble. Showing thickness of tube. From Thebes.

¹ This Plate has been generously presented by the author.

Fig. 12. Tube drill hole in diorite, showing deep grooves of cutting. Found at Gizeh.

„ 13. Tube drill holes meeting in limestone, showing how nearly they were placed together. Found at Gizeh.

„ 14. Turning with two centerings, on a piece of diorite bowl. Found at Gizeh.

„ 15. Turning out of a diorite bowl, with fixed arcs of cutting. Found at Gizeh.

All the specimens from Gizeh are of the fourth or fifth dynasty; the others are of unknown dates.

DISCUSSION.

Mr. JOHN EVANS complimented the author on the powers of observation he had shown in finding traces of the technical methods in use in ancient Egypt. Though inclined to accept the majority of his conclusions he differed from the author's views as to the method of drilling, by which such cores and cavities as those exhibited had been produced. Even had some extremely hard stone, such as the diamond, been inlaid in the ends of boring tubes, it would have been impossible to secure them inside tubes of a quarter of an inch in diameter. The conical shape, both of the holes and cores, implied a considerable waste of power, and this waste would only have been increased had the outside of the boring tubes been purposely studded with jewels. In saws and in boring tools of the present day, the cutting edge was intentionally made wider than the blade or stem, so as to diminish friction, and had the Egyptians adopted a crown of diamonds to their drills like those in use by the Diamond Boring Company of the present day, they would doubtless have adopted a similar precaution. Even with any amount of power and pressure, it would be impossible to bore so rapidly into hard diorite that the drill should advance at the rate of about one-twentieth of an inch at each revolution, as had been inferred by Mr. Flinders Petrie from the spiral grooves on the cores and on the sides of the circular holes. These grooves, however, were, in Mr. Evans's opinion, significant of the drilling tool having been a tube of some soft material—possibly soft copper or iron, or, as appeared to have been the case with the Swiss Lake dwellers, even of horn, which had been employed with some hard, gritty substance, such as corundum and water, and had thus ground down the circular channels. In grinding in this manner, there was a tendency for particles to follow each other along regular grooves, so that the sawn surface, as, for instance, of New Zealand jade, exhibited parallel striae, which, however, afforded no indication of the rapidity with which the saw advanced in the stone. It was not improbable that the spiral grooves on the cores were made either in introducing the tube charged with fresh grinding material into the recess or in

withdrawing it when clogged. With regard to the diorite bowls, Mr. Evans mentioned the modern jade vessels made in China, which he believed were produced by the ordinary grinding process. He had himself made some experiments in boring with wood and bone instruments in stone, using sand as the abrading material, and he had found approximately parallel or partially spiral grooves produced on the inner surface of the hole, which bore no relation to the progress made in drilling. On the whole he thought that the method of drilling stone practised in Egypt must have had much analogy with that in use in early times in Switzerland and Northern Europe, and that corundum, rather than diamonds or any other jewels, was the actual abrading agent.

Mr. F. G. H. PRICE had listened with great interest to the valuable paper of Mr. Flinders Petrie, and had really very little to add; but he would be glad to be informed by Mr. Petrie whether he could say what had become of the many thousand implements used by the ancient Egyptians for stone-cutting purposes, as he was unaware of the existence of any in public collections.

Mr. E. P. LOFTUS BROCK considered that the cuttings through the hard materials shown by Mr. Petrie indicated that the boring instruments must have had cutting edges harder than the materials cut through. The lines of cutting were exceedingly fine and true, and were not blurred or smoothed, as would have been the case had any, or much, sand been used to help the cutting. The presence of so many specimens on the table, or referred to by the lecturer, appeared to indicate a more rapid system of work than anything done by prehistoric tribes. Indeed, it would have been impossible by any of their processes to cut out the huge sarcophagi, or to have formed the platforms, &c., referred to. The discoveries made by Mr. Petrie appeared to open out a new page of Egyptian history, all the more remarkable since the discoveries referred to a remote period, when recorded history itself was beginning.

Mr. A. L. LEWIS suggested that the question, how and where the quantity of cutting material necessary for executing the immense amount of work done by the Egyptians was obtained, was worthy of consideration. He thought Mr. Petrie's suggestion, that the Egyptians performed their great architectural feats at times when they could do nothing else, was a very happy one.

Mr. RUDLER, while expressing his general admiration for Mr. Petrie's work, ventured to suggest that, on the assumption that the ancient Egyptians used diamond-mounted drill-heads, it would be difficult to conjecture whence the necessary supply of material could have been derived. This difficulty was increased by the fact that the ordinary crystalline form of diamond was found to be useless for drilling purposes, the only kind applicable to such work being the black *carbonado*—a mineral of exceedingly local occurrence in Brazil. He consequently thought it desirable to seek for some common material in a more accessible locality. The use of emerald seemed at first a feasible suggestion, inasmuch as this stone was largely worked by the ancient Egyptians. But

the speaker doubted—notwithstanding Pliny's reference to the remarkable hardness of the Egyptian *smaragdus*—whether so brittle a substance would be of much service in jewel-mounted drills. He therefore inclined rather to Dr. Evans's suggestion that corundum, in some form or other, was the agent most likely to have been used. Supplies of this material might readily have been procured from Ethiopia or from Armenia. The Armenian whetstones of Theophrastus were probably made of emery; Pliny speaks of the superiority of the Armenian *naxium*, and at one time it was imported into Greece, notwithstanding the proximity of the Naxos deposits. Probably the Armenian variety possessed superior hardness, toughness, and purity. It is doubtful whether the ancients made much use of diamond for working stone, and the Rev. C. W. King—our great authority on ancient gems—believes that the *adamas* of the early Greeks was corundum—the “adaman-tine spar” of some mineralogists even at the present day—rather than the true diamond. It had been suggested by Sir G. Wilkinson that the Egyptians in working hard stone used bronze tools supplied with emery powder. Without assuming that the ancients hardened copper in the way suggested by Mr. Duffield (Appendix to Dr. Schliemann's *Ilios*), it might be supposed that a comparatively soft metal, armed with particles of a hard mineral, would form a highly efficient agent. Dr. Evans had brought forward some striking illustrations of the work that may be accomplished when the matrix consists of such tissues as those of horn and wood. Mr. A. R. Wallace had described how the Uaupes in South America were able to drill holes in so hard a material as rock crystal, by the rotation of a pointed leaf-shoot of the wild plantain, worked with sand and water. The process had also been described by other travellers, who explained how the leaf-shoot of the *Urania Amazonica* was patiently rotated between the hands while the piece of stone was secured between the great toe and the second toe. These illustrations sufficiently proved that particles of an abrading material, embedded in a soft matrix, could drill into a substance quite as hard as itself, for the rock crystal was certainly as hard as the sand which attacked it. The subject of working hard stone by primitive peoples had recently been discussed with much ability by Dr. A. B. Meyer, of Dresden, in his valuable work on Jade.

Mr. HYDE CLARKE suggested that the *naxium* of Armenia presupposed the emery mines of the island of Naxos, a chief source of supply to this day, and which were accessible to the Egyptians in early epochs when there was extensive navigation on the Mediterranean.

Professor FLOWER, Professor BOYD DAWKINS, the Rev. GREVILLE CHESTER, Mr. PARK HARRISON, and Mr. F. C. J. SPURRELL also joined in the discussion.

Mr. PETRIE, in reply, said that he had not intended to mention Sir Gardner Wilkinson, though he had his work in view; but as that had been alluded to, it should be noticed that he gave no explana-

tion whatever of the methods of stone cutting; he described some of the most evident results, without any technical criticism or research; and from his allusions to the choice of soft metal for *chisels*, to be used with *emery powder*, it is difficult to see what definite ideas he had of the capabilities or use of tools. Hard powder used with a chisel would be merely crushed up, without doing any work. Of his most valuable drawing of dressing the stone by means of a line and offset pieces, explained in this paper, he does not give even one word of description. Hence, saying here that his remarks on these subjects are only such as any intelligent traveller might make, is certainly not an over-strong statement. That setting the stones inside very small tube drills would be impossible, may be freely allowed; but no tapered cores under 2 inches diameter are known in hard stones; the small cores are all in alabaster, which could be readily drilled merely by sand. The setting of stones in the insides of the tubes would not be very difficult, either through larger holes in the opposite side, or else by cutting holes right through the metal. The great pressures alluded to were only for cutting in block; doubtless the delicate bowls were thinned off by grinding and polishing; and probably they would be filled solid with pitch during the final finishing. The disappearance of the tools is not to be wondered at. The specimens of work yet found are but a small fraction of what a single tool would cut out; and of the far commoner tools, as chisels, hammers, &c., there are but very few specimens known. The jewelled tools would be royal property, and would never be buried with the workman; and the bronze would be melted up, and jewels reset, again and again, as they wore out.

The following Paper was read by the author:—

On some PALÆOLITHIC KNAPPING TOOLS and MODES of USING THEM. By F. C. J. SPURRELL, Esq., F.G.S.

(WITH PLATE III.)

ALTHOUGH in many situations where implements of flint have been found in river-deposits, flakes or wasters and minor implements have been found also, yet there has been little success in getting the waste flakes and imperfect implements, together with the tools or knapping stones with which the much-desired *hâche* was formed.

It is obvious that where these remains are found in coarse gravel, there will be small chance of obtaining such particulars; and if so found there would be no proof that any particular knapper produced any particular flake, or was employed for any particular purpose. But on sandbanks, in out-of-the-way parts of a river-bed, and in retired situations, such remains

have been found; in fact, they are common and easy to find, and their relative age and positions at once suggest a close connection between them.¹

Of the mode of producing flakes it is obvious that much may be inferred from the mere inspection of a flake; but when we consider the uniformity of the material we are surprised at the variety in the shape of implements and the difference in the style and method of chipping as practised by the old men.

When three years ago I found at Crayford a locality on the beach of a river, covered with a layer of chipped flints, I was able to show that the chipping had been done on the spot, and that no movement whatever of the remains had taken place since they were dropped by man.

All the stones had been obtained from the base of the chalk cliff, and it thus happened that the irregular staining of their surfaces by the iron from the gravel, helped materially in replacing the chips in their original form. The relics consisted of large and small flint flakes and minute chips, together with cores and spoilt hâches. With them I found hammers.

From the appearance of the flakes it was at once seen that several methods of workmanship had been practised, and this was more clearly brought out on their restoration into the original blocks.

In some cases the whole stone was split up into long, parallel, regular flakes (such an one I gave to Sir John Lubbock). In other stones the object was clearly to break the stone, but apparently without ulterior purpose as to the pieces detached, so coarse and clumsy were the results.

Other stones were broken evidently to obtain knife-like plates (which were afterwards carefully elaborated), and this was accomplished by means of a continual rectification of the superior (and necessary) plane of percussion from which the large flakes were struck.

In order to obtain a better stroke a continual lowering of that plane was practised by the freeing of minor flakes from it, parallel with its surface; each act of flaking, both horizontally and vertically, being frequently alternate. The restoration of flakes presents, consequently, a stair-like arrangement under this treatment.

¹ In searching the refuse of bone-caves, where flakes, knappers, and tools for working bone, &c., certainly lay with the general rubbish, it would seem that little care has hitherto been taken to collect and re-arrange them; it can only have been haste or carelessness, on the excavators' part, that lost so good an opportunity of obtaining those details which help to trace the turns of thought and ingenuity in overcoming those difficulties which enable us to distinguish the minor points marking the progress of man's mind. Though so much has been lost much may still be done, and it is to be hoped that in future greater care will be taken.

The hammers with which flaking was done were apparently ordinary flints. Such flints are much bruised at the *ends*, or the *edges* of the *end* of a long stone, broken across; and I think that this must have been their most common form, as it certainly produced the simplest kind of palæolithic chipping.

There can be little doubt that some large flints, which show a peculiar jarred appearance chiefly on flat or hollow parts, were anvils on which to rest the block.

Another method of working was to break off large or small pieces from the outside or crust of a nodule, with the ultimate purpose of getting at its interior. The flakes yielded by this method, from Crayford, as restored by me, show great irregularity of form and order of removal; they are usually broad and inelegant.

With these flakes were found two stones, which from their appearance I at once concluded to be hammers of a special shape. One of them is a green-coated flint of great toughness; it was chosen to suit the grasp of the hand, and was trimmed at either end to a suitable length. The thick layer of tough white crust on one side of it was peculiarly suitable, as resisting its own too rapid wear. It was not until this crust was worn down to the black flint that the hammer was thrown aside.

Another small chalk flint was evidently tried, but being of the ordinary kind was speedily thrown aside as unsuitable or worn out.

It became necessary to discover how this hammer was used, which I am able now to say I have done. By making experiments on this form of hammer (fig. 1, Plate III), and procuring a similar piece of stone, I succeeded in producing similar work. There was no anvil needed in this work.

The block of stone to be operated on being held in the left hand was struck by a long swinging sweep of the right hand holding the hammer, in the way a violin bow is held (in the direction of the arrow in fig. 2, Plate III). It is evident that in general the lower surface of a long hammer passing lengthways over the edge of the block would merely strike the thin edge, at (*a*), and that unless an irregularity in the hammer happened to hit further back, a flake, properly speaking, would not be detached. In order, therefore, that the hammer should strike the right spot (*b*) at once, the projecting edge (*a*) was chipped or trimmed slightly, so as to remove the projection in the line of stroke back to (*b*), at the same time roughing the surface and enabling the hammer to get a "grip": this being done the flank was successfully detached.

That this method was actually employed may be distinctly shown by the fact that many of the flakes, when placed together,

show the trimming above described passing continuously across the base of both of them: thus they were chipped in a preparatory way more or less, or not at all, as occasion required.

One of the flakes, from which a smaller splinter has separated after it had reached the ground (the result of continued action of the blow which severed the flake from the block, and which, therefore, could never have been used), is much roughened by this chipping.

In arranging the flakes for the restoration, most of which had fallen to the ground at once, some could not be found, and this is explained by the fact that when imitating the use of the hammer above described, occasionally a flake flew to a great distance: one flew with a fearful whirr a distance of over 60 feet; doubtless this incident occurred to the old men. Notwithstanding that these flakes, on their first exhibition, were at once identified by a very high authority as having been "used," it is evident that the chipping at their bases is not the result of wear, but is merely a detail of manufacture.

I was enabled, by a careful examination of the surface, to see from the disposition of a heap of flakes, which lay divided by two slight lines and other signs, that the operator *sat* on the sand with his legs but slightly apart.

Sometimes stones nearly of the size and shape of the implement required to be formed were selected, and the crust removed wholly or in part from the surface. It does not appear that any of the crust was retained for a purpose, as in almost every case where the chipper was sufficiently skilled the whole was removed. I have seen many spoilt tools broken, in the apparent endeavour to remove some such blemish, which were otherwise perfect.

Since the Crayford find I have met with several floors where men wrought, and in one, which I succeeded in keeping somewhat to myself for a time, I observed some fresh details.

This was at Northfleet; it, like the last, was a river beach, perhaps dry in summer and subject to floods;—though, subsequently to the deposition of the refuse, some of the ground has been pushed about by ice, yet the immense quantity of flakes (cartloads), and other signs of man's occupation, furnish abundant evidence that he lived near, and worked on the spot.

These flakes are of all sizes, from over 3 lbs. in weight to a grain or two. Some are of great age, and have travelled far or lain long kicking about on the shingle, while others are as sharp as if made to-day; of the latter, some are clumsy, and some long, thin, and very straight.

Besides the ordinary method of chipping, that is, of hitting one stone with another in a manner not requiring much technical

ability, at this spot a hammer was employed (fig. 6) which I have not noticed elsewhere. Many stones (flint) were found whose characteristic may be summed up by saying that they were pointed (and *the* point much used). In their best form they resembled kites, though they frequently were but long flints (a not unusual form), chosen for their weight and the possession of a good point, which, if not existing, was trimmed up; in weight they ran up to 10 lbs. Some of them were, however, not strictly pointed, but broken obliquely to the length, the part used being the projecting edge.

At this place, in the ordinary way of making a *hâche*, a stone was shaped and finished at the butt; in finishing the tip, however, by means of striking longitudinal flakes from a small surface left at that end, a heavy, sharp-pointed hammer was needed for the exact delivery of the blow, such as those before described. When the blow was true, and the tilt of the surface right, all went well; but it was not always so, and by means of spoilt implements I am able to show that the tilt was not always rectified, or the blow delivered with exactitude. Thus the striking off of too thick and large a flake, and the consequent spoiling of the implement, sometimes happened. This may have occasionally resulted from the hammer being worn out.

Another mode of manufacture largely depended on these sharp-pointed hammers. A flint stone being selected, and trimmed coarsely round the sides, was worked on its upper surface into the form of a flat dome; then from one end the whole of this prepared surface was detached by a single blow (fig. 5), producing, when the operation had been well conducted, a "turtle-backed" flake, with a flat surface on the other side (figs. 7 and 8).

In this and the before-mentioned uses of this kind of hammer, it is remarkable how much preparation and labour depended for its ultimate success on adroitness in the delivery of a single stroke! Many flakes were worthless, and were cast aside, but of those which were retained as suitable, two uses were reserved. Some were trimmed round the edges, mostly at one end and the sides, the other end or some part being left untrimmed, as if left for handling without inconvenience. This trimming was not needed so much at first when exquisitely sharp, as afterwards when the edge was lost by use. The trimming is invariably on one side alone (the raised one). I have called these "turtle-backed scrapers" (see figs. 7 and 8).

I think that though trimmed to keep the edge sharp, they would be less efficient than when new. These stones, which might equally be skinning implements, or sleeks (slicks) for dressing skins, were admirably adapted for the first purpose.

An ordinary flake, used to skin an animal, would as frequently cut upwards through the skin, as down on the bones or subjacent tissues, and would be less governable and more dangerous to the integrity of the skin in proportion to its sharpness; but these turtle-backed flakes, held with their rounded (or bevelled) sides towards the skin, could only cut *downwards*, and if they slipped could not perforate or injure it, a matter of extreme importance in those times. For the second use, that of currying and scraping, it being a less delicate operation, they would be well fitted.

A large number of the flakes at Northfleet showed signs of having been "worked." Some were what are called round or thumb scrapers, others present a straight edge, and some resemble the so-called hollow scrapers, and doubtless many might have been used for scraping bone and wood into shape. On examination, however, it is perceived that most of these implements show all the chipping to be on one side only, that it is sharp and unpolished, the hollow is very wide, and placed much to one end: these points do not agree with the shapes or uses of scrapers. They are not scrapers, but *knappers* (fig. 3). In consequence of this surmise, whilst trying to make a flat flake into a round scraper with another simple flake, I found that by resting one horizontally on a point of stone or wood, and striking it with the edge of another in a direction downwards, and slightly away from me, I could easily imitate to perfection many found at Northfleet, while on a repetition of the operation with the same knapper, I found its action improved, until at last it was difficult to tell the original from my own by the form alone.

So necessary was the deep hollow to success in their use that flakes were chosen which had a slight accidental hollowing. Some were left-handed in use. Their weight runs from about an ounce up to 8 lbs., and apparently the large ones must have been used in making hâches, some stones presenting signs of such treatment. It appears likely that the turtle-backed flakes were trimmed by this means occasionally.

I have never found any stones, other than flint, that have been used for the purpose of knapping or striking off flint flakes on river-banks, though tough pebbles of quartz, sandstone, &c., are common enough, and when these have presented signs of wear it was of that kind resulting from pounding some comparatively soft substance on another stone. I obtained the tools exhibited from the beds with my own hands; in truth, had I not done so, I should not have considered them worthy of the attention of this Institute; and I felt the necessity, on this occasion, of being able to say this, even if it entailed the omission of a few better examples than those present.



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.

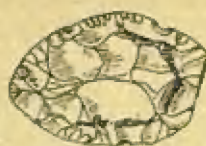
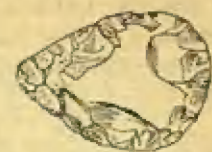


Fig. 8.



Fig. 9.



The restriction which I thus placed upon myself has prevented some further observations being made, of an inductive and experimental nature, on palæolithic as well as later stone-working.

Description of Plate III.

- Fig. 1. Stone hammer from Crayford; 3·8 inches long, 6·7 inches in circumference.
- „ 2. Diagram explanatory of the use of the hammer (fig. 1). S represents the hammer, and F the block of flint.
- „ 3. Flat flake of flint chipped by use into a hollow on one edge; there are no signs of chipping on the other side. This is a good example of the common form, the larger ones are less elegant.
- „ 4. Diagram representing the manner of using the flake (fig. 3). It is held (the worked part upward) by the right hand at *a* in the position *a*. Another flake to be trimmed is held by the left hand at *b*, resting on a piece of wood; *b* being struck at *d* by the downward motion of *a*, the chips fly from the unopposed surfaces of each flake.
- „ 5. A block of flint trimmed at the sides and at the top, where the form is indicated by dotted lines. This upper part is struck at one blow, at the spot marked *x* by fig. 6.
- „ 6. A hammer, which was used at the pointed end, to ensure accuracy; the blunter end may also have been used. This is the most usual form.
- Figs. 7 and 8. A tool made from a flake resembling the upper part of fig. 5. The flat side is left unworked; the other is trimmed to a regular form, and served as a slick or skinning implement.
- Fig. 9. Also made from a flake like the upper part of fig. 5. It is, however, worked on both sides into a *hâche*; this tool is in admirable preservation.

N.B.—The above outlines (figs. 2 to 9) are drawn from actual specimens, on a scale of one-fourth natural size (linear).

DISCUSSION.

Mr. W. G. SMITH drew attention to the fact of quartzite pebbles, with abraded ends, being found in neolithic positions, such pebbles being generally accepted as hammer-stones, for flaking and pounding. Quartzite, he said, was specially useful for this purpose, being hard and tough, whereas flint is brittle. Mr. Smith exhibited quartzite pebbles, with the ends abraded off, from palæolithic positions, and he said if they were accepted as hammers when found with neolithic objects they had an equal claim to be considered hammers,

when found with palæolithic implements. Mr. Smith exhibited some finely chipped palæolithic implements, and said it seemed impossible that such minute flakes had ever been detached from the tools by hammering at all. He believed all the small flakes were pushed off, as some savages now push off small flakes in making stone tools. In support of this he referred to the neolithic tools, termed "fabricators" by Dr. John Evans, and said that tools of a very similar character were found in palæolithic gravels: some of these he produced, and said, if the former small tools were used for tapping and pushing off small flakes, it seemed reasonable to consider that the palæolithic examples were used for a similar purpose. He agreed with Mr. Spurrell that hammer-stones of flint were often used in palæolithic times, and anvil-stones, as described by Mr. Spurrell, exhibiting distinct marks of percussion from hammer-stones, he had many times seen on the palæolithic floor discovered by himself at Stoke Newington Common.

Professor FLOWER, Professor BOYD DAWKINS, and Mr. PARK HARRISON took part in the discussion, and the author briefly replied.

ANTHROPOLOGICAL MISCELLANEA.

THE VARINI, VARANGIANS.

To the Editor of the "Journal of the Anthropological Institute."

SIR,—Mr. Howorth, in his paper, "The Varini, Varangians, and Franks," Vol. xii, No. iv, p. 536, has referred to me in relation to the identity of the Carini and the Angli, proposed by me.

He quotes therein, "See Hyde Clarke on the 'Settlement of Britain and Russia,' Trans. R.H.S., vii, 254."

He has not pointed out that in those late "Transactions of the Royal Historical Society," p. 254, will be found the same materials, identifying the Varini and the Varangians, as are given by Mr. Howorth in our "Journal," pp. 525-553.

Neither has he informed us that the whole subject was brought by me before our members in 1868, and will be found in Vol. vii of the "Journal of the Ethnological Society," for the year 1879, pp. 60-91. My title is "The Varini, or Warings, and their Relations to English Ethnology."

In the same volume is a paper by Mr. H. H. Howorth, which will serve to bring it more clearly to his memory.

Your obedient servant,

HYDE CLARKE.

32, St. George's Square, S.W.,
12th June, 1883.

STONE IMPLEMENTS FROM INDIA.

Mr. H. RIVETT-CARNAC, F.S.A., has been good enough to send to the Anthropological Institute a small collection of stone implements from India, accompanied by a letter from which the following extracts are taken:—

"During the past few years Mr. J. Cockburn and myself have been fortunate enough to find stone implements in large quantities in Banda, a hilly district of the North-Western Provinces of India. These implements consist chiefly of stone axes, or celts, of types well known in Europe. We have also found stone hammers, ring-stones, and a variety of other implements, some of cosmopolitan types and others unique.

"The celts found are upwards of 400 in number, and are of two distinct types, polished and chipped; the former of diorite and the latter of basalt. We are of opinion that both types were in use at the same time. Implements of true palæolithic types, made of quartzite, occur scantily in the Banda district, but are more numerous further south. The celts vary from $12\frac{1}{2}$ inches in length and 8 lbs. 3 oz. in weight, to $2\frac{1}{2}$ inches in length and $3\frac{1}{2}$ oz. in weight. The unique specimens of hammers, &c., and the largest and most remarkable of the celts, have been presented by me to the British Museum.

"A larger collection of *chert* implements than has hitherto been made in India has been brought together by Mr. Cockburn, who will describe them more fully at a later date. The ethnic affinities of the collection are, he points out, curious. On the one hand the scrapers and knives are of European types, as are also the mass of the celts. Then there are certain types which clearly resemble *chert* implements, hitherto found only in Egypt by Mr. Jukes Brown ('*Journ. Anthropol. Inst.*,' Vol. vii). A third type, apparently not common elsewhere, which he designates the 'saw-backed knife,' has recently been found in the Island of Melos. The coarser kinds of stone knives of quartz, sandstone, and basalt, are not far removed from those used by the modern Australian savages.

"The arrow-heads, as far as can be judged, come nearer to the multitudinous American forms than to any other; but the resemblance may rather be due to the comparatively large number of these implements which are known from America, and their comparative rarity in other countries. Some of the *chert* implements are of recent origin, and we have come to the conclusion that they were probably in general use among the Kolairian or Dravidian aborigines of this part of Bundel Khund about 500 B.C., and that the use of stone among these people was not quite abandoned as late as 600 A.D.

"A piece of sculpture, representing an aborigine, *armed with a stone axe*, recently discovered at Kalinjar, is assigned to the seventh century after Christ. How far antecedent the use of stone may have been in this part of the country no one will venture to guess in the present state of our knowledge, but the majority of the implements have been found on the borders of the great Gangetic alluvial plain—itsself of no great antiquity.

"The alluvium in this part of Bundel Khund is largely made up of decomposed basaltic rocks, which crop up here and there to the very margin of the Jumna. No doubt this river has had much to do with the level and adjustment of this alluvium.

"Some of the *chert* implements, which are much weathered, are doubtless of vast antiquity; but the evidence, as far as it has been sifted, is in favour of the view that the people, corresponding to the palæolithic men of Europe, used excessively rude implements of jasper, quartzite and basalt, rather than *chert*, which is by no means abundant."

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OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

MAY 8TH, 1883.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

- From Professor JACOB HEIBERG.—The Viking-Ship discovered at Gokstad, in Norway. By N. Nicolaysen.
- From the AUTHOR.—Étude Anatomique et Anthropologique sur les Os Wormiens. By Dr. Victor Chambellan.
- The Greek Plays in their relations to the Dramatic Unities. By George Gould.
- Quelques Observations sur l'Anthropologie des Comalis. By Dr. E.-T. Hamy.
- Les Multilations Dentaires au Mexique et dans le Yucatan. By Dr. E.-T. Hamy.
- La Croix de Téotihuacan. By Dr. E.-T. Hamy.
- From the BERLIN ANTHROPOLOGICAL SOCIETY.—Zeitschrift für Ethnologie. 1882, Heft 6; 1883, Heft 1.
- From the GEOGRAPHICAL SOCIETY OF LISBON.—A Questão do Meridiano Universal.
- From the ACADEMY.—Atti della R. Accademia dei Lincei. Vol. VII, Fas. 5-8.
- From the ASSOCIATION.—Journal of the Royal Historical and Archaeological Association of Ireland. January, 1883.

- From the SOCIETY.—Proceedings of the Royal Geographical Society. May, 1883.
- Proceedings of the Asiatic Society of Bengal. December, 1882; January, 1883.
- Journal of the Asiatic Society of Bengal. Extra number to Part I, 1883.
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- Bulletin de la Société Imperiale des Naturalistes de Moscou. 1882, No. 2, 1^e and 2^e liv.
- From the ERROR.—American Antiquarian. April, 1883.
- "Nature." Nos. 704, 705.
- Revue d'Ethnographie. Tom. II, No. 1.
- Revue Politique et Littéraire. Tom. XXXI, Nos. 17, 18.
- Revue Scientifique. Tom. XXXI, Nos. 17, 18.
- Science. No. 10.

MR. W. GALLOWAY exhibited some bone implements and other objects found in a prehistoric shell-mound in the Island of Oransay; also a cranium and bones found in a Viking grave of the Norse pagan period at Kiloran Bay, Colonsay. These specimens were exhibited at the International Fisheries Exhibition.

The following paper was read by the author:—

On some CUSTOMS of the ABORIGINES of the RIVER DARLING,
NEW SOUTH WALES. By FREDERIC BONNEY, Esq.

DURING my residence in a large area of country on the northern side of the river Darling, between the years 1865 and 1880, I had, as one of the early European settlers, the opportunity of knowing the aborigines in that district, before they were spoilt by civilisation. Employed by me as shepherds, and in other occupations, on a large sheep and cattle run, they were generally my companions in work during the first few years of my bush life, and over many a camp fire I have learnt much of their character and habits. The tribes that I know best are those called Bungyarlee and Parkungi, the former living about the creeks north of Mount Murchison; the latter by the river Darling above and below Wilcannia. They speak the one language called Weynebulckoo, which is also spoken by the adjoining tribes called—

Baroongee, of the Lower Paroo River.
Mullia-arpa, of Yencanyah district.

Wombungee, of Fort Bourke district, on the Upper Darling.

Bo-arlee, of the Barrier Ranges.

Tung-arlee, of the Lower Darling.

The territory of these tribes lies within lat. 29° – 34° , long. 141° – 146° .

As a rough estimate of the aboriginal population of this territory when Europeans first settled in it, I may say I do not think it would average more than about 100 on an area of 2,000 square miles in any part of the territory. The country, in its natural state, could not support a large population, being subject to protracted droughts, during which both food and water must have been scarce. During my fifteen years' experience there were three severe droughts, varying in duration from eighteen to twenty-two months. At such times the little rain that fell on the dry and parched ground was insufficient to replenish the water-holes, or soak the ground enough to promote a growth of vegetation. But it appears, from what some of the old natives have told me, that Europeans have not experienced the worst that the country is liable to, for they say that they once saw it in a drier state than it has been since the settlers came, and there has been stock on the country as a drain on the water supply. On that occasion their only water supply was at the few springs in the back country and at the rivers. All surface water-holes were dry; some of which would, I know, stand through a two years' drought with stock drinking at them. They camped at the springs or the rivers, existing on the half-starved animals, which were forced to drink from the same supply, and in consequence of their weak condition were killed without much difficulty. In a drought there is neither grass nor herbage in the neighbourhood of water, and the desert-like appearance of the surrounding brick-red sandhills and grey-coloured clay flats is relieved only by sundry hardy bushes and small trees, which somehow hold up against the extreme dryness and hot winds. These long droughts are generally broken suddenly by a fall of 2 or 3 inches of rain, followed by lighter rains, which rapidly improve the appearance of the country; grass and herbage become abundant, and waterfowl return in large numbers to the creeks, and the aborigines gladly avail themselves of the opportunity of moving on to fresh hunting grounds, which they can only reach when surface water is plentiful.

About the year 1850 an epidemic attacked the Bungyarlee and Parkungi tribes, killing about one-third of them. I have been told by some of those who escaped that it came upon them while the country was in fair condition, and there was ample

food and water for their wants. The disease affected the legs and quite crippled those attacked. It caused a panic among them all, and they travelled as fast as they could away from the locality where the epidemic appeared, leaving in their flight the dead unburied on their track. Those who were strong escaped by walking to the Paroo River and Upper Darling, to which countries the epidemic did not extend. About Peri Lake the mortality was great, many bodies being left on the sandhills unburied.

There is a similarity in the typical features of all the Australian aborigines, but to a close observer each tribe has its own peculiarities sufficiently marked to be distinguished from one another. The Weynebulkoo natives are in stature slightly below the average of the English. The colour of their skin in their youth is of a dark chocolate hue, which darkens with age until it is quite black in the middle-aged and old. The new-born babe is almost white, but darkens quickly, though for some time the soles of the feet and palms of the hands are white. Their hair is always quite black, that of the men rather curly, of the women straight; the men generally have long and thick beards, and the bodies of the old men are not unfrequently covered with hair. The characteristic features of all the Australian aborigines are thick lips, overhanging brow, and extended nostrils; but these are all less prominent than among the tribes farther north, in the colony of Queensland. Many of them are weak-looking people, having little muscular development in their legs and arms; their legs especially are thin, though I have met with a few remarkably well-made men among them. They have, as a rule, good hands, with well-shaped fingers and finger-nails: teeth generally very good, very white and regular; they seldom fall out, but with use wear down evenly all round until little more than stumps are left in the jaws of the old people.

Though ugly and unprepossessing in appearance they are most kind, gentle, and of quite average intelligence and morality. Dirty in their person they often are, for which the scarcity of water in most parts of their country is some excuse. The aborigines of Australia are often spoken of as the lowest type of humanity. I think this is a libel on the whole of them, and I am positive it is so as regards the tribes I know best. It is unjust to take as specimens of the race those to be seen in the civilised districts near the coast, and about townships in the interior, who have lost all the native good that was in them, and become public-house loafers, often associating with Europeans who have fallen as low as themselves. There is nothing of the nobility of the savage about them; such are certainly most

degraded creatures. To this sad end many of them come as civilisation creeps towards the interior of the country. The country having been occupied by Europeans and laid out in runs stocked with sheep and cattle, the habits of the aborigines have much changed; this probably is the cause of the rapid decrease of their number by deaths. The young now are often weakly, suffering from chest complaints; and few children are born, and fewer live to become adults. Before long the only representatives of these tribes will be some living about settlers' homes and townships, in a half-civilised state. In fact, there are now few to be found who have not been somewhat spoilt by civilisation; therefore I wish to record what I have learnt of them during their better days, and hope that others, who have had like opportunities, will do the same, so that sufficient information may be brought forward to prove their race to be better, nobler, and more intellectual than it is generally believed to be by those who have not lived among any of the tribes. All who have done so, and taken the trouble to learn something of their language, so as to better understand them, must have formed a good opinion of them.

I proceed, then, to give a description of the life-history of these tribes called Bungyarlee and Parkungi.

When a woman is near her confinement she leaves the general camp in company with another woman, and together they make a temporary camp beneath a shady tree, one or two hundred yards distant. This movement is probably made to prevent the occurrence of a death in the camp, which would cause all to move to another spot and erect fresh shelter; for after a death all desert the camp where it occurs.

It seems to have been the custom to kill many of the children directly after birth, to save trouble and privations in time of drought, when long distances must be travelled in the search for food and water, and it would be difficult in the fierce heat to transport a number of young children over a dry journey of twenty miles, and often more, without more water than can be carried in the skin bags used for that purpose. Whether the infant shall be killed or not is generally decided by the mother's brother, if she has one, and he is near at hand. If it is to be killed, that is done by a blow on the back of the head, by strangling with a rope, or choking with sand, and the body is buried without ceremony; but if it is decided that it is to be reared, the mother, as soon as possible, returns to the camp with her child, where it is carefully nursed and very well treated. Both men and women are very fond of children, and the kindest attention is shown to them by young and old alike. They are not spoilt by this kind treatment all round; one word

from the parent generally is sufficient to check a child when doing wrong, and the greatest respect is shown to parents by their children. Altogether the treatment of children by these people, after they are once taken up and nursed, is judicious and very creditable. It is strange that while the life of the new-born babe is so slightly valued at its birth, a little later it should be valued so much. If it has to be killed at the birth the work is done without any notice being taken of it, but if allowed to live, and it should die a natural death a week or so later, all the women in the camp would mourn its loss—the mother and near relations crying aloud at intervals during the day, and in the evening at sundown, either in the camp or at the grave. Mourning is worn, the same as after the death of an adult person. One mother rarely has more than four or five children, and they are sometimes not weaned from the breast until they are more than three years old. The birth of twins is not less rare than among Europeans. I know of one such case where one of the twins was killed, and the mother dying soon after, the other child, a girl, was taken charge of and suckled by another woman, and she grew up to be the worst specimen of morality I met with among the uncivilised aborigines; she was neither honest nor truthful, lacking the two virtues natural to most of them.

When a mother is about to carry her child she leans her body forward, and, taking hold of the child by its arms, swings it over her left shoulder and places it between her shoulder-blades, with its hands round her neck. She then throws a fur rug round herself and the child, and afterwards a netted bag (*numyuncka*) is drawn tight under the seat of the child, with one end brought over each shoulder of the mother, and tied together under her chin to keep the child and rug in their position; so a pouch is formed to hold the child while it is being carried about. The men generally carry children on their shoulders.

A soft cream-coloured chrysalis (*kapudger*), about $2\frac{1}{2}$ inches long, which is found under the bark of trees and at the root of broom-bushes (*poontee*), is much sought after as a nutritious food for children. It has very much the taste of a raw egg.

Some boys, when about the age of ten, have a hole bored through the septum of the nose with bone needles (*poongootah*), in which they can, when grown up, wear a bone about 6 inches long as an ornament at their dances,¹ and both girls and boys at about the same age are marked on their chest, arms, or back by raised scars (*nincka*), which are usually straight, horizontal, or vertical lines, about 2 inches in length, and close together,

¹ These, generally known as corroborees, by these tribes are called *Yeecko*.

made by cutting the flesh with a stone chip (*carnee moolee*) in the winter season, when hoar frost is rubbed on to the flesh to numb it. Sometimes fine charcoal powder is rubbed into the cuts to lessen the pain and quicken the healing on young people; the scars are often very prominent, but they decrease with age.

Children are named after animals, birds, reptiles, or fish; the name is a word in their language meaning the movement or habit of one of them.

They avoid mentioning the name of a deceased person, and the word is not used in their language until it can be mentioned without causing pain to the relatives and friends, for it is from feelings of sorrow and not of fear that they do not mention the name.

When a youth is about sixteen years of age his elderly male relatives become anxious that he should be initiated into manhood, or, as they call it, "made a young man of." Considerable importance is attached to this ceremony, but the youth often tries to avoid it, for it is anything but a pleasant one to him; but plans are generally made without his knowledge for its performance. Sometimes an early morning dance is arranged, when a sham fight is got up to attract the youth's attention, and then he is caught and carried off. On other occasions, after a consultation on the subject in camp, women being present, some old men go to the youth and ask him to accompany them to go through the ceremony; should he refuse, young men catch him, put the down feathers from ducks among the hair of his head, and carry him by force into the bush while his father and the women cry aloud. When they have carried him some distance from the camp they place a small hard wood wedge on each side of one of the front teeth in the youth's upper jaw, and one of them, with a downward stroke with the pointed end of a throwing stick (*pirrah*), forces the tooth out. A string of opossum fur is wrapped round his body, and he wears a head-dress made with strips of opossum or kangaroo skin, his body and face being smeared with charcoal powder; one or two young men accompany him while in the bush, where he must remain for some time. They play with a wooden instrument called *moola-uncka*, which is a flat and oval-shaped piece of hard wood tied to the end of a long piece of twine, which, when whirled in the air, makes a loud humming noise; it is an amusement to the youths to make the noise, and by it women, none of whom are allowed to go near the youths, know where they are. Those thus treated are called *Tumba*. Sometimes, instead of knocking out the youth's tooth, they smear his body with red ochre (*keerah*). He is then called *Turlurra*. After a while some old men visit the youth's camp, where they are

met by some younger men, who arrange themselves in a row in front of the youth, with their backs to him, and face the old men, whom they ridicule and insult until the old men get into a rage and throw sand in their own faces, and then throw fighting sticks or boomerangs at the young men, which they ward off with their shields (*columburra*). The old men then rush forward at the young men, who seize and throw them on the ground, after which the old men retire to the camp, but return later and dance with the youth and his companions, repeating their friendly visits until the end of the ceremony. During the first two days the youth drinks only blood (*carndurra*) from the veins in the arms of his friends, who willingly supply the required food. Having bound a ligature round the upper part of the arm they cut a vein on the under side of the forearm, and run the blood into a wooden vessel (*yokudjah*), or a dish-shaped piece of bark. The youth, kneeling on his bed, made of the small branches of a fuchsia bush (*gooyermurra*), leans forward, while holding his hands behind him, and licks up the blood from the vessel placed in front of him with his tongue, like a dog. Later he is allowed to eat the flesh of ducks as well as the blood. When the necessary preparations are made men and women go from the general camp to see the youth smoked. He and one of his companions sit or stand on a heap of green boughs from the fuchsia bush (*gooyermurra*), under which there has been laid dry grass and sticks; this heap is called a *windoo*, their word for an oven. The two youths are wrapped round loosely with a rug, their heads only being uncovered. After the dry grass and sticks at the bottom of the heap are lighted, thick smoke rises through the green boughs and collects round their bodies beneath the rugs. After they have been smoked in this way the rugs are raised over their heads, so as to envelope the whole of them, the smoking continues, the youths placing a finger in each nostril to save themselves from suffocation. After a little of this they are removed from the *windoo*. The hair of the youth who is being initiated is cut short on his head and pulled out of his face, and red ochre, mixed with emu fat, smeared over his body; he wears a necklace of twisted opossum hair. The time this ceremony extends over varies from ten days to a month. The youth's companions take the tooth when it is extracted, and return it to him later with a present of weapons, rugs, nets, and such like. The youth places the tooth under the bark of a tree, near a creek, water-hole, or river: if the bark grows over it, or it falls into the water, all is well; but should it be exposed, and the ants run over it, it is believed that the youth will suffer from a disease in the mouth.

These tribes are divided into two classes, called "Muckwarra"

and "Keelparra"; the relationship between the two is called "Kengoojah." A Muckwarra must marry a Keelparra, and *vice versa*. Children belong to the same class as their mother, and when quite young are often betrothed by their parents. It is considered a very serious offence for two persons of the same class to marry, and one that cannot be forgiven. The offenders are spoken of by all as bad, and are generally despised. The loss to them of the love and respect of their friends is a very heavy punishment; illegal marriages are therefore rare.

When a young man has gone through the ceremony of initiation he is allowed to marry, if so desirous, the girl he was betrothed to when young. Accordingly, he asks the parents for her, and they, pleased that their early wishes are to be realised, at once arrange for the couple to be married in their simple way. The bridegroom is told by the principal old man in the camp that he can take the girl he wants, and at the same time there is given to him a piece of string with a knot tied in it. Should the bridegroom have a sister whom the bride's brother wishes to marry, two knots are tied in the string by the old man, one at each end of it. This the bridegroom keeps until he is able to hand it to his brother-in-law with his sister or another woman as wife; for he considers it his duty to give a wife to his brother-in-law if he can. The mother of either the bride or the bridegroom makes a camp for the young couple, and tells the bridegroom to occupy it, and when the bride elect comes into the camp she is told to go to her future husband; should she refuse to do so her relatives use force to make her, and they are afterwards considered as married. Although young women are often compelled to marry a man of whom they know little and often nothing, they generally find happiness and contentment in their married lives. Quarrels between husband and wife are rare, and they show much affection for each other in their own way. When a husband returns to the camp after an absence of several days and even weeks, the meeting with his wife appears a cold one. They take no notice of each other at first; he lays down his bundle containing his rug and other belongings, and enters into a conversation with others in the camp, while his wife takes his bundle inside his camp, and when an opportunity offers she joins in the conversation.

Once I was standing near a woman when her husband returned after a long absence. I knew that they loved each other, and asked her why she did not go forward and greet him. She replied sorrowfully, "Black fellow will not let us do like white fellow." She waited until he started for the camp, then she picked up his swag, or bundle, and followed him at a distance. It is not the custom to be demonstrative on such occasions. Brothers and

friends when meeting do not at first notice each other, but gradually draw near, and, when alongside, throw an arm round each other's neck, and so stroll about, saying kind things to each other. Naturally they are most affectionate and courteous, always careful lest by act or word they may be thought unkind, and hurt the feelings of those they love and respect.

They believe that sickness is caused by an enemy who uses certain charms called the *Yountoo* and *Moolee*.

The *Yountoo* is made of a small bone taken from a leg of the dead body of a friend, either before or after burial; it is wrapped up with a small piece of sun-dried flesh, cut from the body of another deceased friend; string made with the hair from the head of a third friend generally serves as the tie. When this charm is required to be used it is taken to the camp where the enemy sleeps and placed in the hot ashes of a fire, with a piece of string tied to it, where it is warmed and then pointed at the person to be killed, a small piece of the bone being chipped off and thrown at the sleeping enemy. The *Yountoo* is taken away, and in about five weeks laid under the surface of the ground, and a fire lit over it which burns it gradually. The person at whom it has been aimed sickens after it has been burnt a little, and dies if the doctor does not suck out the piece of bone which is supposed to have entered the sick person's body.

The *Moolee* is a rough piece of white quartz, oblong in shape, and about 2 inches long; a piece of twine, made of opossum fur, is fastened to one end with some black gum (*nynia*). In using these, one is pointed at the person to be killed, and is supposed to enter the body; the other is warmed, then placed in some fat from a dead body and wrapped round with hair from the head. The whole thing is then put in a fire and left to burn slowly; when it warms, the person becomes sick, and dies unless relieved by a doctor. It is believed that the possession of one of these charms aids a man in composing and devising a new corroborree.

Both the *Yountoo* and *Moolee* are treasured as valuable charms, and hidden from view.

A doctor, or *maykeeka*, is a man, either young or old, generally the latter, who has in some way shown that he has the power of curing sickness by sucking from the body of a patient either the chip of bone from the *Yountoo* or the *Moolee*. This appointment is not an hereditary one. The bone chip from the *Yountoo*, when sucked from the body, is thrown away; but the *Moolee* must be thrown into a water-hole, or the river. When a doctor succeeds in sucking either from the body of his patient, the cure is considered certain. He shows something

which he tells the patient and the friends he has sucked from the body.

On one occasion, when I was camped in the Purnanga Ranges, I watched by the light of a camp fire a doctor at work, sucking the back of a woman who was suffering from pains in that part. While she sat on a log a few yards distant from the camp fire, he moved about her, making certain passes with boughs which he held, and then sucked for some time the place where pain was felt; at last he took something from his mouth, and holding it towards the fire-light, declared it to be a piece of bone. The old women sitting near loudly expressed their satisfaction at his success. I asked to be allowed to look at it, and it was given to me. I carelessly looked at it, and then pretended to throw it into the fire, but keeping it between my fingers I placed it in my pocket, when I could do so unobserved; and on the following morning, when I examined it by daylight, it proved to be a small splinter of wood, and not bone. At the time the patient appeared to be very much relieved by the treatment.

During the year 1866 there was rather a large gathering of the aborigines at Karannia, where visitors from Cultowa, Marra, and Neelyambo, places higher up the river Darling, had come down to teach their neighbours a new corroborree. During an interval in one of the performances, a tall young man, who was suffering from a pain in his right ankle, limped into an open space between the dancers and the fires, and was met there by an old man, a doctor. They wrestled together until the doctor threw his patient, and sucked the ankle as the patient lay quietly on the ground; after sucking for some time the doctor rose and walked outside the circle of performers and spectators, and taking something from his mouth threw it towards the moon in the north-east. Returning to his patient he lifted him from the ground on to his feet; the patient stamped his right foot on the ground to test the strength of the ankle, as if he was trying on a new boot, and then walked away without showing any lameness.

I once saw an old woman at Momba trying to cure another one of a sickness in her stomach, by sucking the supposed poison through a string. The patient lay on her back on a rug on the ground, with a piece of string tied rather tightly round the middle of her naked body, with a loose end about 18 inches in length from the knot over the stomach. The woman doctor, squatting by the side of her patient, leant over her and passing the loose end of string through her mouth, sucked it from the knot to the end and spat saliva and blood into a tin pint pot; this was repeated many times, until the poison was supposed to have been sucked through the string from the body.

The large *moolar-uncka*, a wooden instrument before mentioned, is often used while a doctor is operating.

Over-eating, after a successful day's hunting, following as it often does a fast, causes a good deal of sickness from which these people suffer. Headache is a common complaint, and to relieve this a native ties to his forehead a small bunch of heated boughs; the fuchsia bush (*gooyermurra*) being considered best for the purpose. The same remedy is generally used to relieve pain elsewhere; an attendant holds the bunch of boughs while warm to the suffering part, and heats it again when cold.

I have found large doses of castor oil, half-a-pint or more, the safest and most effective remedy, and one that is very agreeable to the taste of the natives, who are fond of fat and oily food. On one occasion I gave between two and three drops of croton oil, in one dose, to a man who some years previously had been cured by a large dose of castor oil, when there appeared to be little chance of his recovery. When a similar attack came on he begged for castor oil, of which I had none in stock, so I gave him the croton oil instead, and with very good effect. Our medicines must be given to them in strong doses to be of any use.

A very sick or weak person is fed upon blood which the male friends provide, taken from their bodies in the way already described. It is generally taken in a raw state by the invalid, who lifts it to his mouth like jelly between his fingers and thumb. I have seen it cooked in a wooden vessel by putting a few red-hot ashes among it. When the aborigines are sick they are always despondent, and say that they are going to die; the sorrowful looks and loud lamentations of their friends around them are sufficient to make any one despondent; and as they lie in their camp naked, excepting the bandages of twine made with the hair of a friendly native, or with fibre or sinews, which are tied round the head and limbs wherever there is pain, they are miserable-looking objects.

A disease called *Tarree* is rather common among them, and generally fatal, though it has been successfully treated by a European doctor. It attacks the middle-aged and old, a hard lump forming in the stomach while the rest of the body wastes away to a skeleton; the lump grows to a great size, causing difficulty of breathing, and at last suffocation. Many of the children have large stomachs, which with several becomes quite a deformity, affecting their health and breathing; sometimes they even pine away and die. One youth under my notice, who suffered much in his childhood from this complaint, has grown up to enjoy fairly good health; but any great exertion causes troublesome breathing and coughing.

It has been reported of the Australian aborigines that they help on to death, and even kill those who are helpless and crippled. I have good reason to believe that such is not the case among these tribes. After witnessing their kind treatment of the sick under most trying circumstances, I am of opinion that they are most kind and attentive to such, and that their patience and sympathy are quite exemplary. It sometimes happens that a change of camp has to be made, and a long journey over a dry country undertaken, with a helpless invalid, who is carried by the strong men, who willingly bleed themselves until they are weak and faint, to provide the food they consider is the best for a sick person.

Some years ago there was at Karannia (now called Mount Murchison) a strong young man whose intellect was weak, and who occasionally had fits of madness, when he would leave the camp and wander alone in the bush without food or covering, and his relatives and friends were much troubled about him, and watched him at a distance as well as they could. Once his old father, a big and powerful man, went out in search of him, and found him wandering near the river; he entreated him to return to the camp with him, when the son turned upon his father with a tomahawk and cut him; the old man returned to the camp, and with tears in his eyes told me what had happened, and begged me to assist him to bring back his mad son before he perished in the bush.

At Momba, an old man named Booringooroo, suffered for several years from violent pains in his head; occasionally his reason was affected by them, and he would wander from the camp and travel long distances by himself in the bush. All showed the deepest sorrow and sympathy; the young men went after him on his tracks, and tried to persuade him to return with them to the camp; if they did not succeed they did their utmost to keep a watch over his movements, and guard him against a death from starvation in the bush. This man, I believe, was suffering from the effects of a sunstroke. Cases of lunacy are very rare. During my experience I have not met with any cases of the kind except the two I have just mentioned.

The burial of a body takes place immediately after death. The feet having been tied together by the big toes, and the hands by either the wrists or thumbs and little fingers, the body is wrapped in a rug and bound round with a rope, and the bundle tied on to a long stick called *moolairree*. Two men are selected as bearers, and one walks in front of the other towards the grave with the body hanging from the *moolairree* stick between them, an end of the stick resting on a small pad stuffed with grass, on the head of each of the bearers. Should

the friends of the deceased have any doubt who caused the death, some questions are put to the corpse, when near the grave, by one of the principal old men in the camp, while it hangs from the stick between the bearers. The old man, with a bough or boomerang, strikes the corpse, and asks such questions as these:—

Were you camped at such and such a place when you were taken ill?

Did so and so kill you?

If the answers are not given by a movement of the corpse it is carried a little farther, until it answers by moving in the direction of the sorcerer's camp; should he be in the camp where the body is it turns round, and when the right name is mentioned it moves forward rapidly, the men running with their burden to the grave. In this way they find out to their satisfaction who they must punish for the death of the deceased person.

It is not improbable that by this custom of immediate burial some bodies are buried before life has left them. A man named Cultekololudger is said to have cured himself, or come to life again before burial. He had been ill for a long time and became very thin. His relatives, thinking he was dead, prepared to bury the body; but when they were carrying it to the grave it made an unusual movement, so the bundle was opened, and the bearers were startled by Cultekololudger asking them why he had been tied up. He is now living near the Barrier Ranges.

There are no fixed burial grounds. A grave 3 or 4 feet in depth is dug at a spot chosen not far from the camp where the death takes place, the digger using the sharp-pointed stick called *pirrah* to loosen the ground, and shovelling out the loose earth with the wooden bowl called *yokudjah*. The bottom of the grave is covered with boughs from the broom bush, and then the bundle containing the corpse, having been separated from the *moolairee* stick, is laid in the grave by two men who stand in it; one of them partly unwraps the bundle so as to cut off a piece of flesh or pull the hair from the head, whichever it is decided to do. Usually a piece of flesh is cut from the thigh of a child, or from the stomach of an adult. At the burial of a very small and thin man which I witnessed, there was a discussion at the grave as to which should be done, and it was decided to pull some hair from the head, rather than take any of the flesh. This was done by one of the men in the grave, who pulled out several large locks of it. At some burials several men stand by the open grave and cut each other's heads with a boomerang, and hold their heads over the grave so that the blood from the wounds falls on the corpse at the bottom

of it; some earth is then thrown in, and if the deceased was highly esteemed a second bleeding takes place. Some sticks are placed over the corpse, and above them one long one has its ends driven into the solid ground at the head and foot of the grave by a man jumping on it: that is done to prevent the wild dogs getting to the corpse.

During the ceremony of burial there is much crying and wailing, especially by the women, each one crying in a loud tone the word signifying their relation to the deceased, commencing with a high note and gradually lowering their tone in a shaky voice, repeating the word while they have breath to spare, dwelling long on the last syllable of the word. The words most frequently heard are *ammucci* (mother), *gumbidgi* (father), *whimberri* (child), *matooji* (friend). This wailing continues over the grave for some time after it is filled in, and at the camp for days afterwards; when one of the women begins to wail, others join, and the mournful chorus can be heard throughout the neighbourhood. The women generally cry at the camp or the grave each day for a week or more after the burial as the sun is setting.

The piece of flesh cut from the dead body is taken to the camp, and after being sun-dried is cut up into small pieces and distributed among relatives and friends of the deceased: some use the piece in making the charm called *Yountoo*; others suck it to get strength and courage, or throw it into the river to bring a flood and fish, when both are wanted.

After a death in camp, all leave it and pitch their camp on another spot, which is sometimes not far distant. The rugs, weapons, nets, &c., the property of deceased, are hung in a tree near to the camp for about two months, and are then washed and used by some of the relatives.

Most of the women wear mourning, and the nearest relative generally covers her head with white plaster made of calcined selenite or gypsum, and smears the same over her face and body. The head-covering, which is a thick cake, wears a long time; it is fixed to the head by the hair and a small net, which is generally laid over the head before the cake is plastered on. It requires patching only occasionally; but the thinner coat on face and body soon crumbles away, and has to be renewed every day. After wearing this for some months it is allowed to crumble away, and is not renewed. In the case of a widow, she is told by her late husband's brother, or her mother, when she may cease wearing her mourning, and the brother-in-law is sometimes allowed to take her as wife, though he may already have one. Some men are allowed two wives, but the rule is to have one only. I have seen an old woman wearing a patch of white

plaster over the crown of her head, as mourning, after the death of a favourite dog.¹

An ordinary grave is covered by a low mound of earth, a few stout pieces of dead timber are laid upon it, with a heap of green boughs over them. Some have a low brush fence round them, which has an opening on one side to let the wind in, as they say, and some large egg-shaped pieces of white plaster laid round the grave between the low mound and the brush fence. The most elaborate one that I have seen was covered with a small bough shed, about 8 feet square and $4\frac{1}{2}$ feet high, which had a large opening on one side; the ground outside was cleanly swept, and the green boughs on the mound inside were covered with whitewash; some women, at a camp near, attended to this grave, bringing green boughs to replace those withered, whitewashing and sweeping.

Some months after a death the brother or near relative of the deceased starts off to find the man accused of causing the death, and to fight him; other men, young and old, accompany him. When he meets his enemy he fights him with spears and boomerangs; should he wound his enemy his craving for revenge is satisfied, and he calls out *ow-oo-ta* (enough), and the fight ceases. A grand dance, or corroboree, follows in which all join and make merry together. Should he happen to kill his enemy he and his companions bury the body. It is said that they sometimes cut off the head and hold it up towards the camp to enrage the deceased's friends, and a general fight is the consequence. This, I think, seldom happens; for, as a rule, a very little fighting satisfies these people: a few blows and a little blood are enough to do that, and make them friends.

DISCUSSION.

The PRESIDENT observed that few departments of anthropology were so pressing just now as the collection of materials relating to the customs and characters of races, which were becoming either extinct or, as Mr. Bonney expressed it, "spoilt" by civilisation; and such materials could only be obtained in a satisfactory manner by those who had the opportunity of living among them for a considerable period, as such lengthened observation often corrected erroneous impressions, derived from superficial inspection. Mr. Bonney's communication was therefore welcome as an important contribution to this branch of knowledge. Low as the Australians were generally assumed to be in the scale of society, they evidently had a very complex and severely enforced code of unwritten

¹ There are generally a large number of dogs about a camp, which are used in hunting the kangaroo and emu, and are very kindly treated. The dog and its master are often to be seen sharing the same rug or blanket on a cold night.

etiquette, which served to keep up among themselves the mutual respect and order necessary to carry on the duties of social life. As this code and many of their customs evidently differ in different parts of the country, and among different tribes, it was desirable that all authentic details should be collected and recorded without delay.

Mr. PARK HARRISON also made some remarks on the subject of the paper.

The AUTHOR, replying to a question asked by the President, said that there was a decided curl in the hair of the aborigines of the river Darling, and called attention to a specimen which bound a native tomahawk exhibited on the table. In answer to the question, what decided the fate of the new-born children, and whether any preference was shown for the male sex, he replied that the fate of the children depended much upon the condition the country was in at the time, and the prospects of the mother rearing it satisfactorily, no preference being shown for the male sex. Being asked to give some information about the religion of the people, the author suggested that the subject had better not then be entered upon, as it would occupy too much time; but he hoped to have an opportunity, on a future occasion, of giving some information about it, with some other interesting information about the same people.

The following paper was then read by the author:—

On the DISCOVERY of some WORKED FLINTS, CORES, and FLAKES from BLACKHEATH, near CHILWORTH and BRAMLEY, SURREY.

By Lieut.-Colonel H. H. GODWIN-AUSTEN, F.R.S., &c.

[WITH PLATE IV.]

I HAVE the pleasure to exhibit to the meeting some worked flints and rough flint implements, all obtained within a small area, where I do not think they have been found before.¹ The subject is, I think, sufficiently interesting to place on record with a few notes regarding them.

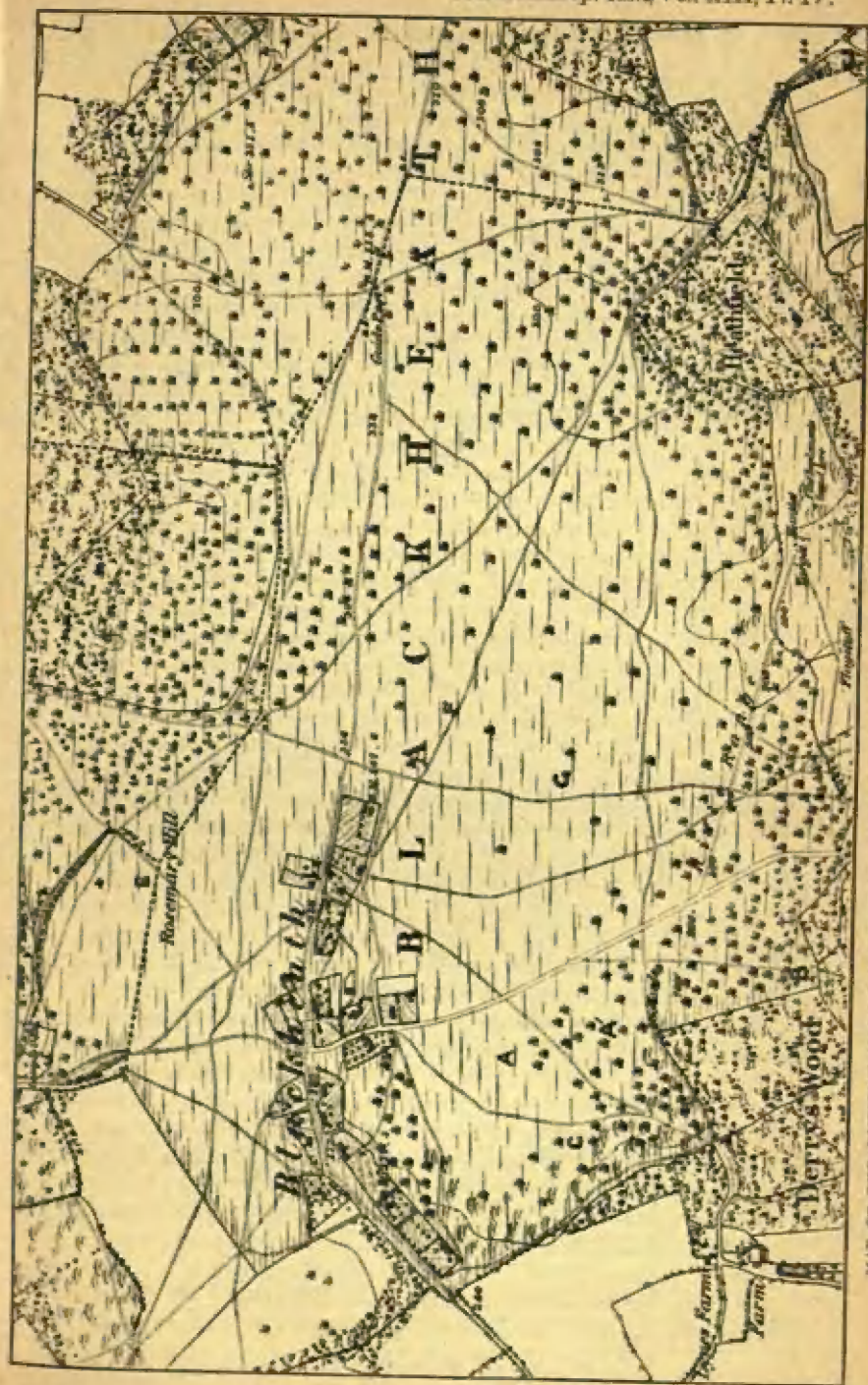
In the summer of 1881, when walking over the heath near Derry's Wood, not far from the village of Blackheath, with Mr. W. Weston, I noticed a piece of flint lying on the surface, which I picked up, remarking at the time it was curious to find it where no signs of former cultivation existed, on a denuded surface of

¹ I am told by Prof. Rupert Jones, that Major Cooper King has found flint implements at Postford, which is also in the same neighbourhood; but I have been unable to see his paper in the "Journal of the Berkshire Archaeological Society." Major-General Pitt Rivers also found them in this locality.

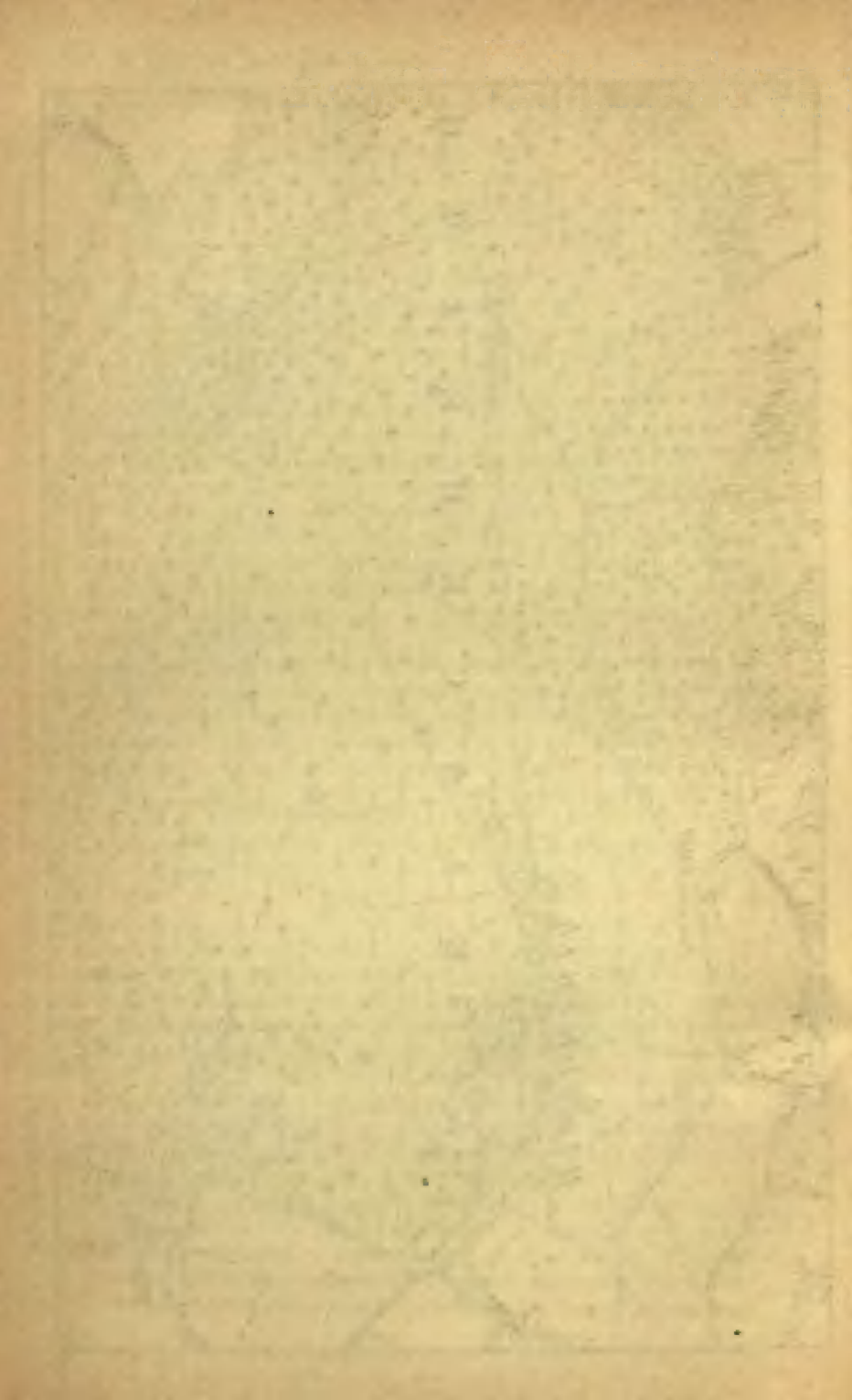
the Lower Greensand so far from the chalk. This led to our looking for more, and we soon found several pieces, some of which struck us as bearing marks of artificial fracture. The ground had been very lately worked over for the ironstone so much used in the district for road repairs. The result of our further search that day was some thirty pieces, large and small, similar to those I now exhibit. I have paid two more visits to the place with Mr. Weston, and he has been able, living at Bramley, to visit the place on other occasions, so that the greater number of specimens have been found by him, and he has lately been able to get from one of the workmen employed the best flint implement of the collection, and others have turned up from the same source. I have on the map (Plate IV) marked off the sites where A, A', B, and C represent the spots where the flints are most abundant. Many pieces, especially from near B, appear as if they had been subjected to the action of fire. The position is a commanding one, extending for about 5,000 yards from A on the north to B along the ridge, which is the highest part of the heath here—a very dry, elevated ridge, the ground falling on all sides, save the south, and it would have formed an advantageous position for a settlement in early times, when the lower grounds were probably densely wooded and more marshy than now. No cultivation could have been carried on here, on so dry and sterile a soil; for the idea of the flints having been brought in with manure had at first struck us, but the limited and local distribution of the numerous pieces evidently formed with design by man, and not accidentally broken by natural causes,¹ disposes of this objection; besides the fact of their not being found anywhere save along the ridges, and there at isolated spots, and one on the west side of its slope. Several of the pieces we took out of the sides of the recently opened trenches, and were from $\frac{1}{2}$ to 1 foot below the surface of the present heath and heather; the rest lay scattered on the bare, sandy, lately excavated surface, and were most conspicuous among the pieces of the ironstone out of the beds *in situ*. I have thought it best to keep and bring here every piece of flint, large and small, that we have found, because it shows the proportion of evidently worked pieces to the rougher examples; it proves, I think, that the rough scrapers, &c., were manufactured on the spot, the race who used them bringing their masses of flint from the downs to the north, distant from Blackheath about two miles in direct line.

A rough analysis of these flints gives the following result. Specimens A, B, and C were collected and sent me by Mr. Weston; D were found by us together. Roughly sorting those pieces which bear the best signs of workmanship, we have—

¹ Notwithstanding that among those found are many with natural fracture.



MAP OF THE COUNTRY AROUND BLACKHEATH, SURREY, SHOWING SITES WHERE WORKED FLINTS HAVE BEEN DISCOVERED.



	Showing signs of workmanship.	Rough.	Small pieces and chips.
A	7	46	150
B	15		
C	17		
D	14	32	48
Total 53		(78	+ 198) = 276.

or close on 20 per cent. of worked to the rougher pieces. But among the smaller pieces there are several that have evidently been struck off the core in process of forming the implement in hand, thus indicating pretty clearly that here the people made them on the spot, perhaps one of the oldest settlements in the south of England, which from its position would be less changed by the effects of denudation than many others in the neighbourhood, lying lower, near the drainage lines of the country; so that it is quite possible, while these flint implements have lain gradually buried by drifting sand, and the growth of moss and heather, the neighbouring streams have cut many a foot deeper into the valleys, and altered much the old configuration of the country, destroying and shifting all similar remains of the race who depended for their existence on the use of flint weapons and implements.

We have since again examined the heath in other directions which I indicate on Plate IV, by the letters E, F, G, and at all these spots we came on similarly broken flints, and invariably confined to a few square yards on the top of the low knolls; a very few were found towards the lower ground—here and there a single piece, and in most instances they were lying on the course of small surface drainage lines, down which they could be gradually carried during heavy rain.

On E, the high point north-east of the village of Blackheath, we found 135, all scattered close together. On sorting them roughly 60 were rough and angular, 75 were very flat, flaky pieces; none, however, were sufficiently well marked to retain, but are like pieces struck off when fashioning an implement. At F and G similar pieces were found lying on the surface of the sand. At G, 30 were rough, 29 were small flakes. At F there were a few only, and flakes predominated. From the labourer digging the ironstone we have obtained other very well-formed

flints, and he had some other larger unworked pieces. He had also kept two very round natural flints, weighing about 1 lb., which may have been used as hammers for beating and softening hides or pounding grain, &c.

Mr. Weston has remarked on the small size of these worked flints, when compared with those figured by Mr. John Evans in his work; but any remarks on the flints themselves I must leave to those who have made them their especial study. I myself am not sufficiently well acquainted with similar remains from different localities and of different age. It is very possible that the small pieces were used to tip the arrows for shooting birds and small mammals—just as the Daffa and Bhutea, who still use the bow, have lighter and smaller bows and small arrows for this purpose. These latter may often be seen sticking out of a high bough of a tree where a bird has been missed, so that a constant supply of these arrows would be required by both men and boys, and the latter use them most.

Description of Plate IV.

Map of the district referred to in the foregoing paper, showing the sites where the flints were discovered. From the Ordnance Survey Map (Sheet 32, Surrey): Scale, six inches to one mile.

DISCUSSION.

Mr. R. MELDOLA stated that he was familiar with the neighbourhood referred to by Colonel Godwin-Austen in his paper, and although he had frequently searched Blackheath in a casual way he had been unsuccessful in finding worked flints there, but he had found numerous flakes and worked chippings or scrapers in the fields round about Bramley and Wonersh. The most perfect implement that he had seen from that locality was a lozenge-shaped neolithic arrow-head, found by his friend Mr. F. Evershed, in a field near Snowdenham Farm, Bramley, about two miles south of Blackheath. [This specimen was exhibited.]

Mr. J. E. GREENHILL observed that the peculiarity of the flints exhibited by Colonel Godwin-Austen seemed to him to be that, while undoubtedly a fair percentage of them bore traces of manipulation, they had not the general character of the neolithic flakes, knives, and scrapers. He suggested as probable that they might be of a more recent age than that commonly assigned to the neolithic in England; and he also hinted that flint was used, even in recent times, for many of the simple daily uses to which we now apply the ordinary steel pocket-knife. It would be exceedingly interesting if reliable data could be obtained as to the use of flint flakes, for cutting or scraping purposes, during the early part of the nineteenth century, before pocket-knives became a necessary

part of every one's equipment. From personal observation he could state that such a use has not entirely died out, and he would be exceedingly indebted to any one who could furnish him with any additional facts, which may have come under his notice, corroborative of this statement.

Mr. F. G. H. PRICE said he would be glad to know if the author could inform him whether there were the remains of any earthworks, entrenchments, or forts upon the hill-tops he had described.

Mr. W. BOWMAN, F.R.S., Mr. A. L. LEWIS, and Mr. PARK HARRISON also took part in the discussion.

The AUTHOR, in reply to certain questions, said he had not made any attempt to fit any of the flakes together upon the cores, as had been successfully done with some collections of flint implements collected on spots where they were manufactured. The ground at Blackheath had been so turned over and disturbed that only a few now lie on the surface; the majority are buried again with sand. With reference to the time since they were fashioned, it must be considerable, as they lie quite a foot below the present surface, evidently an old one, covered with sand, and the darker mould in which the present heather is growing. There are no signs of earthworks on the hill-tops, or in the immediate neighbourhood.

The DIRECTOR then read the following paper:—

NOTES *on* STONE CIRCLES IN BRITTANY.

By Admiral F. S. TREMLETT, F.G.S.

[WITH PLATE V.]

DURING the summers of 1878 and 1879 the late Mr. James Miln, F.S.A.Scot., discovered in the commune of Carnac three low raised circular mounds, which he explored, namely, Nignol, Coët-a-touse, and Kerhouant, the latter being situated near the river Crach. The former contained stone circles, which were in a good state of preservation; the latter, on the contrary, was in a very dilapidated state, yet it was easy to identify it as belonging to the same system. The three had *presumably* been places for cremating the dead, as also for depositing the urns; the greater part of the latter were found enclosed in cists of quartz, covered over by a slab of schist, neither of which stones is to be found in the district.

Nignol is situated near the high road leading to Carnac, at about two miles distance from that place. This tumulus was about 4 feet high, its diameter 50 feet; it enclosed two concentric rings, or stone enclosures, which had apparently been a place where

cremation had taken place. The diameter of the outer circle was 25 feet; it is composed of eight courses of *dry* masonry, its exterior being regularly and smoothly walled, but its inner side had been left quite rough, the stones projecting. The inner circle, which is slightly oval, consists of heavy, rough, and weather-worn blocks of granite, coarsely put together; its diameter is 12 feet; the thickness of this masonry is rather more than 30 inches—in fact, it is difficult to measure it. For plan and section of the circles see Plate V, figs. 1 and 2.

Exterior of Circle at Nignol.—There was found to the south-east a cist which contained an urn, the paste of which was fine. Its exterior had apparently been coated with plumbago. It contained ashes, calcined human bones, pieces of charcoal, an iron nail, a piece of scoria, and a flint chip. At about 3 yards' distance and near to the outer circle two other urns were found, one having been placed on top of the other, which latter had a circular granite cover fitted to it. The upper one was similar to that already described, but the lower one (which was broken) was very inferior, its paste being coarse; it was hand-made and bore the impress of the potter's fingers. Its contents were fragments of schist and granite, ashes, calcined bones, charcoal, a long piece of iron, as also a highly-polished, black, almond-shaped pebble. Outside of these urns there were two flint flakes, each having on it the mark of the bulb of percussion; one was of grey and the other of yellow silex. A little to the east of this spot, and near to the circle, there was found a fourth urn, also in a cist; it was of fine paste, and seemed to be coated with plumbago. It was quite full of fine earth, ashes, calcined human bones, small pieces of granite, and the fragments of another urn of the same type. To the north-east, at about 12 feet from the fourth urn, there were found the fragments of several black urns, together with compact *indurated* human calcined bones and ashes, which were held together by innumerable small vegetable fibres, or roots. As some persons had been previously digging about this spot it is not improbable that in so doing they broke the urns which contained the above, as they were not in cists; only one stone hammer was found to the north of the circles.

Between the Circles.—To the south an urn was found lying on its side; when withdrawn, it was found to have been surrounded by four smaller ones, the latter being upright. The large urn contained ashes, fine earth, calcined bones, charcoal, small pieces of granite, a shard of pottery, and the half of a bronze bracelet, coarsely fashioned and having apparently been exposed to fire. The seventh urn was smaller and contained ashes, calcined bones, some fragments of granite, a piece of curved iron, and

two pieces of wood, being the parts of an armlet, which fell to dust almost immediately. The eighth urn was similar to the preceding one, and it contained also ashes, calcined bones, charcoal, and a small piece of iron. The ninth urn was much smaller; its contents were the same as the previous one, but with the addition of a canine tooth. The tenth was of the same size as the sixth, and contained fine earth, ashes, and calcined bones; it had evidently been previously cracked and repaired before being deposited, as holes had been drilled through its upper part, and in one of these there remained a piece of iron wire, which afterwards fell to pieces. On the west side a fine flint chip and the halves of a granite mortar were found. The digging was continued to a depth of 2 feet, or until the granite rock was reached; great quantities of burnt earth, ashes, and some fragments of iron, were found here.

Within the Inner Circle.—This part consisted almost entirely of ashes and fine particles of charcoal, together with burnt earth. On digging down to the rock the fragments of a small red patera, some shards of fine pottery, and the half of a granite mortar were found above in the humus, and near to the surface there was discovered a part of a Roman amphora. It would almost appear that the dead were here cremated, the granite blocks of the inner circle having been burnt perfectly red, and become friable through the effects of intense heat. The great quantities of burnt earth and charcoal lead to this conclusion; it is to be remarked that the urns which had not been placed in cists were all broken through the superincumbent pressure.

Circles at Coët-a-touse.—The circles at Coët-a-touse are near the village of that name, and greatly resemble the previous ones. The mound was nearly 5 feet high, its diameter at the base 55 feet; it had, unfortunately, been interfered with by the villagers when they required stone to repair a wall. They stated that they had found only shards of pottery and some flat, polished, circular stones. Mr. Miln found on the exterior a stone mortar and a piece of granite having cup markings on it, both of which had been thrown away by the villagers. Permission having been obtained, operations were commenced, the results being practically the same as at Nignol; the circles of both had been similarly constructed; there was also a layer of ashes and fine charcoal down to the rock, besides great quantities of the refuse of bronze castings, also some calcined bones. Outside of the circles there were three cists containing urns in which were calcined bones, &c., a granite quern, two stone hammers, a chipped flint scraper, a saw of yellow silex, the half of a small celt, a whorl, and a polished pebble. On the east there were fragments of several urns, some of which had been blacklead.

Between the circles there were two urns of a grey paste, apparently coated with plumbago. They contained calcined bones, charcoal, ashes, and a small polished pebble. Alongside of it there was a similar urn ornamented with the cup markings, and having precisely the same contents, with the addition of a molar tooth of a young person. At a little distance there was a larger urn similarly ornamented; it also contained a molar tooth, some bones, among which was a part of a skull, one of the vertebrae, and a radius. There were also found here quantities of the refuse of bronze castings, and at a little distance to the north a stone hammer and an implement of schist.

A large circular dish of coarse paste with radiating lines was also found here; it was in good condition.

In the central part there were found several stone hammers for chipping, some of which had been broken, several flint chips, a flint scraper, the half of a whorl, together with ashes, fine charcoal, and burnt earth.

The whole of the urns, and other things which were found in these circles, are now in the museum at Carnac, which was erected after Mr. Miln's death, at the expense of his brother.

It will, perhaps, be somewhat difficult to determine the *exact* period when these circles for cremation were constructed, but I may remark that Roman remains, pottery, bricks, tiles, and querns have been found not far from Nignol and Coët-a-touse, as also that a brass coin of Antoninus was found near the former; and that a part of a Roman amphora was embedded in the earth which covered the circles at Nignol; indeed, there are proofs in every direction of the Roman occupation.

The Circle of Kerbascat.—A circle of the same description was discovered at Kerbascat, near Pont l'Abbé, Finistère, by M. P. du Chatelier. It resembled in every respect that at Nignol; but its exterior circle was more carefully and much better finished. On getting inside of this enclosure the workmen came across large blocks of granite, which they at once tossed outside as being in their way, they little thinking that there was an inner circle, or that they were destroying the monument. M. du Chatelier was astounded on visiting Nignol, when he became aware of the irreparable mischief committed at Kerbascat.

The contents of this circle were very similar to those before alluded to, the urns being in cists. I believe the circle at Kerbascat to be more recent, the shape of the urn, and especially the ornamentation, showing a more advanced state of art (Plate V, fig. 6). There are important Roman remains near Pont l'Abbé.

At Plougoumelen (four miles from Auray) there are seven low tumuli, which somewhat resemble those at Nignol, each having a similar outer circle of dry masonry, but *no central one*. The

Rev. W. Lukis, F.S.A., opened one which contained in its centre a thin bronze bowl, standing on its matting and surrounded by calcined bones; its interior was filled with fine earth, in which were found two iron rings of about an inch in diameter. M. René Galles, in 1872, opened a similar tumulus here surrounded by the usual masonry circle; it had a chamber on its north side, and 5 feet below the level of the soil; it contained two heaps of bracelets, twelve in each heap, a torque, and a finger-ring, all of bronze. A second low tumulus was opened by him, its height being 4 feet, and enclosed by a masonry circle; in its centre there was a square of dry masonry, which was continued down to 5 feet below the level of the soil. In its lower part there was a crypt containing a copper urn (upright), having handles rivetted to it, and which was covered over by an inverted copper dish; the whole was surrounded by charcoal, a thick layer of the same was over it; the interior was quite filled with incinerated bones. M. Galles examined some others, but he found that they had been previously opened; each of these tumuli is enclosed by a similar structure to that at Nignol. There seems, therefore, to exist some analogy between them, which would almost lead to the inference that they had been constructed during the earlier iron period.

At about 200 yards to the north of Nignol, and amid the heather, there are two stone *enclosures* which, until 1880, were covered with earth to a depth of 4 feet, and overgrown with gorse and stunted pine trees. Mr. Miln, believing, from the elevation of the soil, that something must be there, set to work, and soon brought to light two stone enclosures of about 60 yards long each. These enclosures were formed of upright stones, nearly 2 feet high each; their sides were parallel, and the ends were rounded off; their form was that of a parallelogram. The nearest one to Nignol, when cleared out, was found to have at its east end a place for cremation of the *beehive* shape, and corresponded exactly with those discovered by Canon Greenwell in Yorkshire, and which are mentioned in his work, "*British Barrows*," pp. 448, 496, and 506. The western end of the enclosure was cleared to the level of the rock; there were here blocks of granite in disorder, but they and the rock itself had been much reddened from the effects of fire.

The second enclosure, which is but a short distance beyond, was in a far better state of preservation, the stone enclosure being complete; at its north end there was discovered a beehive for cremation in a really good state, and near to the enclosure, on its east side, at about half-way from the ends, a smaller beehive was brought to light. Canon Greenwell, in his work mentions "that in no case did he ever find the slightest

vestige of any bones or remains whatever in the beehives, so perfect had been the combustion." This is precisely the case in the French ones; not even a shard of pottery was discovered in these great enclosures, which contain sufficient space to accommodate 400 persons. To the north of the latter enclosure, but without its boundaries, there are some small menhirs standing.

Up to the present time I have been unable to discover that similar places for cremation have been found in France, and although the "beehives" were occasionally found by Canon Greenwell, in no case does he describe them as being situated in *considerable stone enclosures*.

The name of the place where these enclosures are situated is Māné-Iy-Yeh.

Description of Plate V.

Fig. 1. Ground plan of stone circles at Nignol, near Carnac, Brittany.

Fig. 2. Section of ditto along the line *AB* in fig. 1. In these two figures *CD* represents the outer circle of stones in seven courses of dry masonry; *EF* the inner circle of rough heavy blocks of granite. In fig. 1, *G* shows where previous explorers had been digging; *H* indicates the position in which a cist was found with the urn fig. 3; *I* where two urns were found, of which one is represented in fig. 4; *J* where another urn was deposited; *K* where the urn fig. 5 was found; and *L* where five urns in a cist were discovered.

Figs. 3, 4, 5. Cinerary urns found within the stone circles at Nignol (fig. 1). These urns contained calcined bones and ashes. They are now deposited in the museum at Carnac.

Fig. 6. Cinerary urn found within a stone cist at Kerbascat, near Pont l'Abbé, Finistère.

DISCUSSION.

Mr. A. L. LEWIS said, though he had some years ago been very near the remains described by Admiral Tremlett, he had not seen them; but from the particulars given in the paper, he should suppose them to be mainly of the bronze age. The structures were of an unusual character, and it was fortunate they had not all been destroyed, without careful observations being taken and recorded.

Mr. F. G. H. PRICE had listened to the paper with much interest, and was disposed to consider these cremation circles of comparatively late date. It was difficult to speak positively of the pottery

N ↗

10 yards

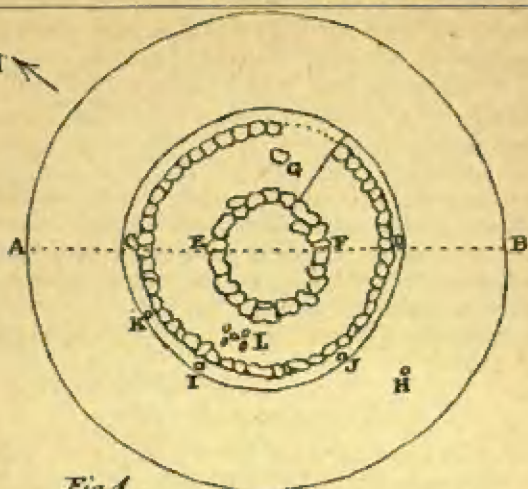


Fig. 1.

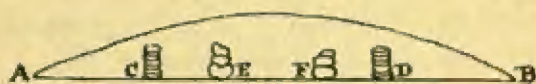


Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.

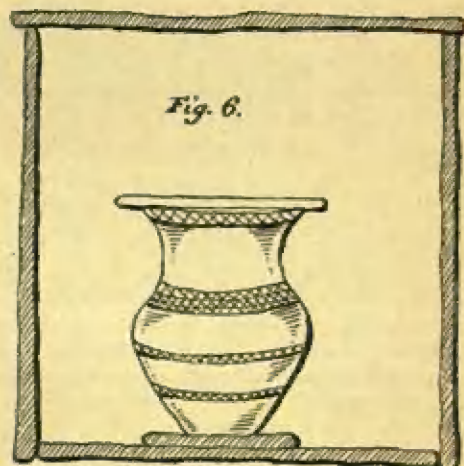


Fig. 6.

in the absence of specimens, but the shape of the urns is what we should describe, were they found in England, as of the British period; the author, however, distinctly stated that the paste, with one exception, was fine, and coated with plumbago, which is unlike British or Celtic pottery. His descriptions suggested a resemblance to the smother-kiln pottery of Upchurch, which is black, and has a metallic appearance. Then, again, in one of the urns, an iron nail was found; when excavating in the Romano-British cemetery at Seaford, Sussex, several nails were met with—in fact, in every interment; so taking this with the description of the pottery, and the fact of a coin of Antoninus being found, the speaker would infer that these circles, or at any rate the pottery, was of the Gallo-Romano date, corresponding with our Romano-British period, of probably the third century. One of the urns had a decided Etruscan appearance, and was much like those from Cyprus, both as to the shape and ornamentation.

The following paper was taken as read:—

The NATURE and ORIGIN of GROUP-MARRIAGE.

By C. STANILAND WAKE, Esq.

THE existence among the Australian aborigines of a remarkable system of marriage, approaching very nearly to the "communal" marriage which is supposed by some writers to have been at one time universal among the Polynesian Islanders, has now been fully established.¹

In accordance with that system an Australian "has the rights of a brother, and he acknowledges the duties of a brother towards every man of his own group, and he can no more marry a woman of a group which is 'sister' to his own than we can marry our own sister."

The reality of group-marriage being admitted, I propose to show its origin. According to Mr. Fison, the "simplest, and probably the earliest, form of the class division among the Australian aborigines is the separation of a community into two intermarrying classes, each having a distinctive title, which is taken by every one of its members." The original classes are now generally subdivided into four, but the law of exogamy is still strictly enforced, and the rules of descent remain the same. Descent was originally, and usually is still, traced through female ancestors throughout both the classes and their subdivisions. All the members of the same class, therefore, trace their descent

¹ "Kamilaroi and Kurnai," by Lorimer Fison, M.A., and A. W. Howitt, F.G.S., 1880.

to a common female ancestor. It is evident that, theoretically at least, such persons form a group of kinsmen, and this group answers to a gens as defined by Mr. Morgan. This writer says a gens is "a body of consanguinei descended from the same common ancestor, distinguished by a Gentile name, and bound together by affinities of blood." He adds that the gens originated in three principal conceptions: "the bond of kin, a pure lineage through descent in the female line, and non-intermarriage in the gens." These three conceptions are embodied in the Australian class, and, as embodied in the rules of descent and marriage, they prevent the intermarriage of near relations, that is, of persons belonging to the same class, or totemic subdivision.

We can thus judge of the social condition of the community from which the present tribes have been derived. As in accordance with the laws of marriage, the kinsmen of which each of the two original classes was composed could not intermarry, marriage of all the males of one class with all the females of the same generation in the other class must have been the rule. By the operation of this rule, combined with group relationship, the members of any particular grade of one class would, as consanguinei, be brothers and sisters to each other, but husbands and wives to all the members of the same grade in the other class. The practical result would be that all the men of each class would have their wives in common, and all the women of each class their husbands in common. Whether the number of persons in the several groups was great or small the result would be the same. When the system had been in operation through many generations, each class or group would embrace many families; but at an earlier date it would consist merely of the immediate descendants of the common female ancestor. In this case all the sons of each family group would be the husbands of all the daughters of the other family. Assuming that the sons of each group retained their own original habitation, their sisters would take up their abode in the family of their husbands, the females thus exchanging places; but if both families resided in a common habitation there would be merely an exchange of *sides*. Such was probably the original practice; as it would seem to be at the present day in the New Hebrides. According to the Rev. Mr. Codrington, as quoted by Mr. Fison, among the Melanesians any islander can easily learn which is his "side of the house" (*i.e.*, class), among the people of any island other than his own.

Group-marriage, whether it is associated with descent through females or through males, is subject to certain regulations which have the result of preventing the intermarriage of persons nearly related by blood. It would seem, therefore, that two principles

underlie that system—principles which, indeed, are embodied in the practice of all uncultured peoples in relation to marriage. They are, *first*, sexual conduct is natural, and therefore permissible, to all—implying a sexual *right* in every individual who attains the proper age; and, *secondly*, sexual unions between persons within certain degrees of consanguinity are criminal, and therefore not to be allowed. The operation of these two principles would, under the conditions of Australian social life, necessarily result in some such system as that described. It would not be sufficient to declare that every man should have a wife, and every woman a husband; for if the man or the woman were away from home they would cease, practically, to be husband and wife, and, according to the first principle stated, they would be entitled to find others to temporarily fill those offices. Moreover, owing to warfare, infanticide, or other causes, the number of men and women might become unequal, or an individual might be unable for a time to perform his or her part of the marital engagement, in which case strict compliance with the sexual right would require that some men should have more than one wife, or some women more than one husband. If all those causes operated, under the restrictions directed against consanguineous marriages, among a race of a low degree of culture, who fully recognised the absence of impropriety in sexual conduct with the attendant sexual rights of individuals, and under the social conditions of a migratory or nomadic people, the development of a system of group-marriage would be certain.

That which we have supposed to have been the practice in the primitive intermarrying groups was, until recently, and perhaps is still, to be met with in a modified form as an actual custom among the Polynesian Islanders. Mr. Morgan states that when the American aborigines were discovered the family among them was in *syndyasmian* form, which is founded upon marriage between single pairs, but without exclusive cohabitation. He affirms, however, that the syndyasmian family had arisen from the punaluan family, and he adds, when replying to Mr. McLennan's criticisms, that in the Turanian and American (*Ganowéan*) systems we find two forms of *punalua*—one founded on the brotherhood of the husbands, and the other on the sisterhood of the wives. In each group the men were polygynous, and the women polyandrous. The punaluan system is thus practically the same as group-marriage. The group formed in either case is, however, very different. The Australian is much the larger, as it embraces all the members of a class, while the Polynesian affects only the persons immediately concerned. Each punaluan group appears to be formed independently, and without conferring any special marital right

on the children belonging to it. This is totally unlike the Australian system, which recognises individuals only as members of certain groups which are perpetuated by descent through its female members. The latter may, therefore, be described as hereditary punalua; the terms *brother* and *sister*, according to it, comprising all the members of a particular grade of the same generation, and therefore having a tribal, rather than an individual, significance.

By what steps the Australian system has reached its present form is doubtful. The two original intermarrying classes would be perpetuated by descent through females, combined with prohibition against the intermarriage of those who, by the possession of the same class name, are known to be descendants of a common ancestor. The introduction of four classes instead of two did not affect the laws of marriage and descent; but it was attended by the curious result that a woman and her children belong to different classes. For example, the daughter of Ipatha is Butha, and not Ipatha, as it would be if children took their mother's name. Mr. Fison sees in this fact an exchange of children between the classes, as to the reason for which he appears to be undecided. He thinks it may be that exchange "became a fixed idea in the native mind when the two classes were subdivided, whence it seemed to be an absolute necessity that the sub-classes also should exchange their children." He suggests, however, that instead of such a subdivision there was an amalgamation of two distinct tribes, each consisting of two exogamous intermarrying classes, and that the amalgamating classes exchanged wives but retained their own children. This very ingenious explanation is consistent with the position assigned by the Australians to their women, who are valued as creatures of passion and child-bearers, rather than as wives; but it is not satisfactory, seeing that it is inconsistent with the laws which govern descent. The real solution of the difficulty would appear to be as follows. In accordance with the principle which recognised the sexual rights of every member of the two intermarrying classes, all the individuals in each class who had attained the age of puberty formed a single group, the members of which were considered the husbands or wives of all the members of a similar group in the other class. By the operation of the rule against consanguineous marriages, however, those sexual alliances were restricted, among tribes having descent in the female line, to the children of a man and his sisters, or of a woman and her brothers. In other words, a man could be the husband only of the daughters of his father's sisters or of his mother's brothers; because they did not belong to his own class. The persons with whom a man or woman can marry

are now distinguished by the title of *cousins* from the other members of the grade, who are called brothers and sisters. It is uncertain whether the title of cousin was introduced before or at the same time as the formation of the four classes. If the latter were the case, the result, while there were only two classes, would be that if all the males of one class were the husbands of all the females of the other class, a man would stand in that relation not only to his mother-in-law and his father's sisters, but also to his own daughters, both lineal and collateral. As Mr. Fison points out, that fact well explains the mutual avoidance or ceremonial politeness practised between mothers-in-law and sons-in-law among the Australians and other uncultured peoples. Mr. Fison remarks that amongst the Fijians the same mutual avoidance is seen between brother and sister, whether they be children of the same parents or not. The Fijian shuns his sister, and the Australian his mother-in-law, because the woman is *specially* forbidden to him, and her touch would be pollution. There does not appear to be the same absence of familiarity between parents and children, but among the Australians marital intercourse between a father and his daughter would, while there were only two intermarrying classes, be specially forbidden. After the introduction of two fresh classes such an alliance would be rendered impossible by the fact that a man's daughters (actual or tribal) would belong to a class different from that of his wife. Two fresh classes may, therefore, have been introduced for the purpose of *expressly* rendering unlawful, in all cases, the marriage between a parent and a child, whether actual or tribal. The real origin, however, of the four class division is probably to be sought in the division of the original marrying group into two grades, a parent and a child grade. If such a division took place, the members of the child grade would have to take class names which, like those of the parent grade, would denote the relationships in which they stood to each other, but differing from those of the parent grade. For instance, if the latter has the names Ipai and Kubi, the child grade would receive the names Kumbu and Muri, which must, like the individuals belonging to them, stand in the same relation to each other as did the original classes. Ipai and Kubi being cousins are intermarrying classes, and such must also be the case with Kumbu and Muri. Moreover, Kumbu and Muri, as Ipai and Kubi, are cousins, because they are respectively the children of a brother and of a sister, and not of two brothers or of two sisters, who, as belonging to the same class, would not be cousins. The following table, framed on the assumption that Ipai-Kumbu represents one of the original intermarrying classes, and Kubi-Muri the other, will show the operation of the laws of marriage and descent.

TABLE A.
PARENT GRADE.

Ego.	Marries.	Children.	Nephew and Niece.	Cousins.
Ipai.	Kubitha.	{ Muri. Matha.	Kumbu. Butha.	Kubi. Kubitha.
Kubi.	Ipatha.	{ Kumbu. Butha.	Muri. Matha.	Ipai. Ipatha.

CHILD GRADE.

Ego.	Marries.	Children.	Nephew and Niece.	Cousins.
Kumbu.	Matha.	{ Kubi. Kubitha.	Ipai. Ipatha.	Muri. Matha.
Muri.	Butha.	{ Ipai. Ipatha.	Kubi. Kubitha.	Kumbu. Butha.

With descent in the female line, the result will be the same whether *ego* be male or female. Mr. Fison remarks that "Ipai does not intermarry with Kumbu, nor does Muri intermarry with Kubi; but the Ipai-Kumbu pair intermarries with the Muri-Kubi pair. These pairs represent the original classes." This statement is not quite correct. Ipai would not intermarry with Kumbu, because this is his nephew class; and for the same reason Muri would not intermarry with Kubi. Ipai and Kubi intermarry, however, because they are cousin classes; and so also do Kumbu and Muri, who stand in the same relation to each other. The pairs which represent the original classes are, therefore, Ipai-Kumbu and Kubi-Muri. The difference between this arrangement and that given by Mr. Fison appears to be very slight, but it is nevertheless of great importance, as not only are the classes related to each other in pairs, but each class is specially related to each of the other classes. The correctness

of the arrangement proposed by me is shown by the following table:—

TABLE B.

<i>a</i>	{ Ipai and Kumbu Kubi and Muri }	are Uncle and Nephew classes.
<i>b</i>	{ Ipai and Muri Kubi and Kumbu }	are Parent and Child classes.
<i>c</i>	{ Ipai and Kubi Kumbu and Muri }	are Cousin classes.

If Muri and Kubi were to change places in *a* and *b*, they would have to do the same in *c*, in which case Muri would be the cousin class with Ipai, and Kubi the cousin class with Kumbu. This, however, is contrary to the fact, and, therefore, we must suppose that Kubi-Muri is the true arrangement of these two classes.

As cousins, Ipai and Kubi, and also Kumbu and Muri, are intermarrying classes, and each pair of cousin classes stand to the other in the relation of parent and child. Whether either pair preceded the other is very doubtful, however, as there is nothing to show that either of them specially represents the original and class division. When, therefore, it is said that Ipai-Kubi is the parent grade, and Kumbu-Muri the child grade, the statement must not be taken absolutely. The intermarriage of the Ipai and Kubi classes gives Kumbu and Muri in the next generation; but the intermarriage of Kumbu and Muri gives an analogous result. In fact, the two series of classes alternate from one generation to another, as shown by the following diagram:—

Ipai.		Kubi.	
Kubitha.		Ipatha.	
Muri.	Matha.	Kumbu.	Butha.
Butha.	Kumbu.	Matha.	Muri.
Ipai.	Kubi.	Kubi.	Ipai.

If descent were traced in the male line, the class relationships would be the same as that exhibited in the Table A given above, except that sons and daughters (actual or tribal) would change places with nephews and nieces. With descent in the female line, the latter are treated as more nearly related to a man than his own children. This is not on account of any uncertainty as to paternity, but simply because with descent through females a man's children (actual or tribal) belong to a class allied to that of his wife, while his nephews and nieces are members of a class, allied to that to which he himself belongs. That the question of paternity does not affect the result is evident from the fact

that although, according to the earlier system, "as regards descent, the father is utterly ignored," kinship through him is as fully recognised as though descent were traced in the male line.

Mr. Howitt thinks that indirect evidence of the former existence of the undivided commune among the Australians may be found in the Dieri legend given by Mr. Gason. This legend is related to account for the existence of the *Mürdu* custom, which forbids marriage between persons bearing the same family name, and it states that the tribe was divided into branches and distinguished by different names, and the members of each branch forbidden to intermarry, in order to prevent the evil effects which had become manifest through the promiscuous intermarriage between brothers, sisters, and others of the closest kin which had before been customary. It may be observed, as to this legend—assuming it to be *bonâ fide*, and not manufactured by Mr. Gason's native informant—that, as it has not been met with among any other tribe than the Dieri, it may have originated to explain a state of things peculiar to themselves. The Dieri may, owing to peculiar circumstances, have sprung from the union between a brother and sister, such as, according to Hebrew legend, must have been the case with the descendants of Cain or of Seth. But the legend, whether it applies only to the Dieri or to the whole Australian race, proves nothing as to their early social condition. At the utmost it shows only how the ingenious native mind explains the origin of the division of the tribes into branches having different family names—a division which, if it had an immediate relation to the question of marriage, may have been, and probably was, intended to prevent consanguineous marriages, by furnishing an easy test of kinship when the tribe had become so numerous or widespread that kinship could not otherwise be well determined. Mr. Fison evidently believes the Dieri legend to be genuine, and he says that "divisions similar to those which it mentions are found throughout the length and breadth of the Australian continent, as well as in many other parts of the world, and that from these divisions, with their inter-sexual arrangements, flows the entire system of kinship called the Turanian by Mr. Morgan." This fact in itself throws doubt on the truth of the legend; seeing that it is very improbable the Dieri tribe, among all the peoples having the Turanian system of kinship, should have alone preserved a remembrance of the cause of the division into classes and gentes. Moreover, according to the hypothesis, that division must have taken place some thousands of years ago, and considering how inconsistent intermarriage between persons regarded as of near kin¹ is with the feelings of the Australians,

¹ The Malagasy allow marriages between brothers' children, and also between the children of a sister and of a brother, on the performance of a prescribed

and all other peoples of a low degree of culture,¹ promiscuity is very unlikely to have been a recognised custom at any time within which the Dieri legend could have originated and been transmitted. For these reasons we shall be justified in supposing the legend to have been of comparatively recent origin, and to have been invented to explain habits which were inconsistent with the ordinary rules of marriage.

Nevertheless, Mr. Fison refers to certain customs which he thinks furnishes strong evidence that communal marriage formerly prevailed among the ancestors of the Kurnai. Among other practices, he mentions "expiation for marriage," which, he says, supplies "precisely those conditions which Mr. McLennan justly requires, as necessary to make such evidence of value. The privileged persons should be of the bridegroom's group only, and the cases should be capable of no simpler explanation." Mr. Fison speaks also of "the remarkable significance of the fact recorded by Mr. Howitt, that, when a woman elopes from her husband, she becomes, for the time being, the common property of her pursuers, if they can catch her. By her own act she has severed the tie which, binding her to her husband, guarded her against the old communal right, and forthwith that right asserts itself." Now I would observe, on this latter subject, that the exercise of the so-called communal right is, in reality, part of the punishment of the woman for her elopement. It is referred to by Mr. Howitt as one of the penalties by which a woman's fidelity to her husband is enforced; and Mr. Fison himself, in mentioning a similar practice among the Fijians, speaks of it as a punishment which is inflicted openly in the public square of the town. Probably the idea of a reward to the captors was added, but the predominant idea would have relation to the woman and her offence. Even if we have, in the case mentioned, the assertion of a right, it is not communal, in the strict sense of this term. The men who exercise the right must belong to the husband's group, and therefore they stand in the same social relation to her as her husband himself. Mr. Howitt does not say as much. Indeed, he states that "all the neighbouring men might turn out, and

ceremony supposed to remove any impediment from consanguinity; but marriage between the children of sisters having the same mother is regarded with horror as incest.—"The Great African Island," by the Rev. J. Sibree, jun., p. 248.

¹ Mr. Mann affirms, as to the Andamanese, that "in all the relations of life the question of propinquity is, in their eyes, of paramount importance, and marriage is only permissible between those who are known to be not even distantly connected, except by wedlock, with each other."—"Journ. Anthropol. Inst," vol. xii (1882), p. 126.) "Although great freedom is allowed between the sexes before marriage, it is strictly confined to those not related by blood" (p. 135).

seek for" the eloping woman; but we may judge by analogy that it would be so. When treating of an analogous subject, Mr. Howitt refers to facts which prove that, among the Australians, a "marriage by capture was only permitted when the captor and the captive were of some classes which might legally intermarry." Among one tribe it is said that "the female war captive was at first common to the men present at her capture, and then only became the property of her captor if she were of a class from which he might take a wife." Whether or not the captor, under these circumstances, participated in the common right is not stated; but if so, it would be under the peculiar conditions of the capture, and would be in the nature of a reward, and not of the exercise of a communal right.

The so-called expiation for marriage is a simpler question, for here undoubtedly the men who assert the marital right belong to the husband's family group. Mr. Fison says expressly, "the group of men who can claim expiation for 'special marriage' is no longer the whole tribe, but the group of tribal brothers who have a common right to the group of females to which the woman belongs." The suggestion here made, that the whole tribe could at one time claim expiation, is not supported by evidence; but if the practice of promiscuity, as a propitiatory measure, is sometimes allowed, this fact cannot be taken as evidence of the former existence of the undivided commune. By analogy with the present custom, we must suppose it was only under a special condition of things that the marriage restrictions were suspended, not that they did not exist. We have probably an analogous case in the curious custom which, for a limited period, allows, under certain circumstances, full licence to the exercise of unlawful actions. Thus, formerly, among the Hawaiians, on the death of a chief "the whole neighbourhood," says Ellis, "exhibited a scene of confusion, wickedness, and cruelty, seldom witnessed even in the most barbarous society. The people ran to and fro without their clothes, appearing and acting more like demons than human beings; every vice was practised, and almost every species of crime perpetrated. Houses were burnt, property plundered, even murder sometimes committed, and the gratification of every base and savage feeling sought without restraint."¹ The death of a chief appeared to be regarded as loosening the bonds of society, or rather, as allowing each individual to give full play to his passions. There may be in such conduct something of an expiation or of an offering to the dead, but probably the chief idea in operation was freedom from restraint. Thus, among the Hovas of Madagascar, on the birth of a child in the royal family, complete sexual license was

¹ "Polynesian Researches," 2nd ed., vol. iv, p. 177.

allowed. On one occasion, according to the Rev. Mr. Ellis, "the town, by reason of the scenes which the streets and lanes almost everywhere exhibited, appeared like one vast brothel." Such a period was described by a term which denoted that death could not be then inflicted for any offence.¹ Among the hill tribes of India, similar licentious conduct takes place at religious or funeral festivals, and the same thing would seem to have been usual among some of the ancient Peruvian peoples. The removal of the restraints of authority is thus expressed, in like manner as, during the Areoi festivities of the Tahitians, the restrictions of the Tabu were removed from females;² the result, in either case, being no doubt much the same as the licentiousness witnessed among the Australians on the occasions referred to by Mr. Fison.

The absolute promiscuity of the Australians may be explained, therefore, in the same way as the conduct of the Polynesian and other peoples during their religious and other festivals, rather than as a case of expiation. Mr. Fison speaks of "expiation for marriage" as a compounding for the breach of a communal right on the part of the woman, but there does not appear to be any room for such an explanation where there is absolute promiscuity. If for "communal" the word "group" is substituted, we see some force in Mr. Fison's explanation; for it is the group-right which is interfered with, and which therefore requires expiation. In fact, that writer elsewhere admits that his conclusion as to the nature of the Australian system of marriage and relationship does not go beyond the statement that it is "based upon communal marriage between permitted groups." The communism is not general, but is restricted to certain groups, the members of each of which *have the right* to form sexual relations with the members of another group, but not among themselves.

¹ Ellis, "History of Madagascar," vol. i, p. 120.

² Ellis, "Polynesian Researches," vol. i, p. 247.

MAY 22ND, 1883.

HYDE CLARKE, Esq., *Vice-President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

- From the AUTHOR.—*Der Schädel Raphaels.* By Dr. Schaaffhansen.
 From the ROYAL DANISH ACADEMY OF SCIENCES.—*Oversigt over det Kongelige Danske Videnskabernes Selskabs*, 1882, 3; 1883, 1.
 From the SOCIETY.—*Proceedings of the Society of Antiquaries.* Vol. IX, No. 1.
 — *Journal of the Royal Asiatic Society.* Vol. XV, Part 2, April, 1883.
 — *Bulletin de la Société d'Anthropologie de Lyon.* Tom. I, No. 2.
 — *Journal of the Society of Arts.* Nos. 1590, 1591.
 From the EDITOR.—“*Nature.*” 706, 707.
 — *Revue Scientifique.* Tom. XXXI, Nos. 19, 20.
 — *Revue Politique et Littéraire.* Tom. XXXI, Nos. 19, 20.

MR. E. P. RATHBONE, F.G.S., exhibited and described at some length a collection of ethnological objects which he had recently brought from Bolivia, upon which the Chairman also made a few remarks.

The following paper was read by the author :—

NOTES ON STONE IMPLEMENTS *from* SOUTH AFRICA.

By Major H. W. FEILDEN, F.G.S.

A COLLECTION of stone implements, part of which I have the honour of laying before the meeting this evening, was made by me in the colony of Natal during the years 1881 and 1882; some of the specimens, however, are from the Transvaal and Zululand.

Of late years some attention has been given to the stone

age of South Africa, and Mr. Sanderson¹ and Mr. Gooch² have published papers in the "Journal of the Anthropological Institute" on the subject, whilst Mr. A. F. Griffith has communicated two papers to the Cambridge Antiquarian Society, the results of the notes and collections of Mr. J. C. Rickard³ in South Africa. In the earlier volumes of the "Journal of the Anthropological Institute," are several references to, and descriptions of, stone implements from the same country.

My original intention was to have selected types from my collection, and submitted them in series; but as this method has already been adopted by the authors of the previous papers on South African stone implements, I have deemed that it may be serving as useful a purpose to group the implements from the different stations from whence they were derived, with a description of the formation or position in which they were found, leaving it to others better qualified than myself to decide whether they are palæolithic or neolithic types.

Many of my specimens were gathered somewhat hastily along our lines of march; but as a rule I marked the objects with the date of find, and a reference to my journal gives the information in regard to locality. This plan of inking the date on the implements I have found very useful, and would recommend it to future collectors in South Africa, as specimens are very apt to get mixed up and confused whilst travelling in that country.

Transvaal.—Five specimens of implements found near Rustenburg, in the Transvaal, by Mr. Thomas Ayres, of Potchefstroom. Mr. Ayres kindly sent me these specimens, but without any further information than the neighbourhood from whence they were derived. These specimens are of interest because they have been brought from a station more to the interior of South Africa than any other with which I am acquainted: it is a further proof of the probable general distribution of stone implements throughout South Africa. These specimens, being coated with a ferruginous oxide, have a very ancient appearance; but from other localities I have taken out implements lying on the iron band quite chocolate-coloured, whilst implements in the same bed, lying only a few inches above them, retained all the original lustre of the fresh-fractured stone.

Newcastle District, Natal.—The greater part of my collections

¹ "Stone Implements from Natal." John Sanderson ("Journ. Anthropol. Inst.," vol. viii, 1879, pp. 15-21).

² "The Stone Age of South Africa." W. D. Gooch ("Journ. Anthropol. Inst.," vol. xi, 1881, pp. 124-183).

³ Palæoliths from South Africa, collected by J. C. Rickard. (South African Neoliths, by J. C. Rickard, Proc. Camb. Antiquarian Soc.).

was made whilst I was quartered in the neighbourhood of Newcastle. The immediate vicinity of our camps, pitched on the slopes of the Drakensberg Mountains, was comparatively bare of stone implements. As a matter of fact, in the gorges and wooded kloofs of the higher range of the Drakensberg, I did not obtain a single trace of an implement or worked stone, though during my rambles I carefully examined any deposits I met with of gravel or recent soil that happened to be exposed. Either the rocky beds of the mountain torrents have obliterated or ground into gravel the traces of man's handicraft, or more probably these mountain fastnesses did not afford the stone-using peoples the same inducements as the lower levels teeming with animal life.

At this lower level, some 1,200 to 2,000 feet below the summits of the Drakensberg, where our camps were pitched at Bennitt's Drift, rolling country succeeds; this is much cut up by the ramifications of the present drainage system. Superficial deposits are to be found in each hollow and depression, evidently the washing down and denudation added to yearly in the wet season. At various spots where these deposits have been cut through by channels—in African parlance, "*dongas*"—I have come across implements. I have taken these out from depths of 20 feet and more below the present surface; but I do not claim as necessary any great lapse of time for the formation of such deposits. The difference between the rates of denudation in a climate like that of Great Britain, in a land covered more or less with perennial verdure, and that of South Africa, is immense. By the time the rainy season commences, the sun and fires have obliterated every blade of grass, the Veldt is parched and arid. Suddenly the thunder-clouds collect on the Berg, and down pours the rain—not in heavy showers, but in sheets of water; each gutter and *donga* fills with a turbid flood, every hill-side and slope is pouring with water, and hurrying to a lower level its loosened surface soil.

I have a group here of five specimens, taken by myself from below 20 feet of deposit; it consists of two spear-heads, two arrow-heads, and a stone with an artificial hole bored through the centre of it; this last is of such soft material, and so friable, that it does not seem probable that it could have been carried far in a torrent course, before its final deposition. The accumulation of 20 feet of soil and stones might be of comparatively recent formation, if we suppose the "*donga*" to have altered its course, as they frequently do; it would not take many years for the bed of the old channel to fill up with detritus.

The next groups of implements to which I beg to draw the attention of the meeting were collected from over an extended

tract of country, namely, along a route following the courses of the Ingogane and Buffalo rivers from the neighbourhood of the town of Newcastle, Natal, to Rorke's Drift, on the borders of Zululand, a distance of perhaps eighty miles. I took advantage of every opportunity that arose for leaving the line of march, and examining the "dongas" and denuded surfaces that lay contiguous to this route. As, however, I came to the conclusion that the implement-bearing beds of this district are very much, if not altogether, of the same date, and very recent, geologically speaking, it may perhaps be as well for me to briefly give my reasons for arriving at those conclusions.

Where the northern tributaries of the Tugela, the largest river of Natal, emerge from the Drakensberg ranges of the Newcastle district, they lose, to a considerable extent, their character of mountain streams. These tributaries, the Ingogane, Incandu, and Buffalo rivers, with their minor affluents, pass from the mountains into flat, broad valleys, over which have been laid deep and extensive deposits of sands and clays, singularly free from gravel or rolled-stones. The present rivers have cut their channels for miles through these deposits down to the hard rock, generally the sandstones and shales of the Newcastle coal bearing series, leaving banks of sand from 20 to 40 feet above the dry season level of their waters. I carefully searched many of these exposures of sandbanks along the borders of the main streams for miles, but did not succeed in obtaining from them any trace of implements. This perhaps is owing to the necessarily superficial examination on my part of such large areas, or to the great attrition which these sands have undergone, but I record my experiences for the corroboration or correction of future observers.

These same great alluvial deposits often stretch across the valleys, and very favourable opportunities are given of examining their extent, on account of the dongas, or torrent courses, which bring down the local side-drainage of the valleys, and cut up the more level expanse of bottom-lands into a network of gullies at right angles to the main streams.

Standing on the slopes of the Drakensberg, and looking down on these valleys, the impression left on my mind was that at one time these valleys must either have been lakes or areas covered by water, and now drained by their outlets, the present river system having cut down to a deeper channel and consequently drained them. I cannot account for some of these alluvial deposits, spread over large areas, and composed of fine material with hardly any gravel, without some such solution.

Not only along the borders of the main stream, but in the gullies made by the side-drainage, I failed in obtaining traces of

man's handiwork from these older alluviums. I do not wish to be understood that such remains are not there, only that I did not succeed in discovering any; we may therefore confidently assert that such remains must be scarce. Where these valley-alluviums impinge on the slopes of the hills that form the watershed of the valley of the Buffalo, and overlaying them where side-torrents debouch to join the main stream, alluvium with some very general characteristics are found. These superficial deposits show bedding parallel to the existing slopes and valleys in which they are deposited, and are evidently the results of the denudation now in progress. They consist generally of marls of slaty grey colour, sometimes darkening into blue, sometimes yellowish grey, resting on denuded rock-surfaces, and generally, if not always, containing concretionary limestone nodules varying in size from that of a pea to a man's hand, and reminding one greatly of the *kunkur* of India. These beds very often have a ferruginous compact base. This ferruginous concrete is well described in Mr. Gooch's paper;¹ it is certainly a very remarkable geological feature, and I have observed it in localities on steep slopes where it would apparently have been impossible for marsh iron, with which Mr. Gooch is inclined to ally it, to have formed. Dr. Peter Sutherland, the Surveyor-General of Natal, informed me that in his opinion it was a marsh iron; but it seems to me in many respects analogous to the iron band which we find in the Bagshot sands, locally called "Pan," and which is, I believe, credited to the infiltration of rainwater carrying down the particles of iron. I must here add, my experience accords with Mr. Gooch, that "I have never found any worked stone ascribable to man below this iron bed," in any alluvium that I have examined.

These marl deposits with concretionary nodules, of the Buffalo valley, when cut up and worn away by sub-aerial denudation, are, in certain places, rich in stone implements and fragments of pottery, which, though often to be extracted *in situ*, are more generally left exposed on the denuded surfaces. This is only natural; for as the rains dissolve the sides of the dongas, and carry away the finer material, the heavier objects are left behind, and as the hill-slopes and small valleys are in many places eaten up by a network of feeders to the main stream, immense areas are disintegrated, and the implements are sifted out in readiness for transfer to the pockets of the collector.

To one point in connection with the implements derived from these concretionary limestone marls I venture to draw attention, and that is, out of the large number of worked stones and implements which have passed through my hands, hardly any have I seen with water-worn edges, and those that have I could gene-

¹ Vol. xi, p. 170.

rally account for, by having gathered them out of the channel where they had been washed down during the rains, and abraded subsequently to their exhumation from the marl. It would appear, therefore, that these implements, chiefly made of comparatively soft material, must have been used and lost in the immediate vicinity of where they are now found, and the large numbers that I have found in certain spots seem to indicate settlements or stations at such points. And the circumstance connected with the distribution of these stone implements is that the most prolific spots are generally just those which would have offered a vicinity of exceptional advantages for procuring game in accordance with the present topography. On the summit-range of the Drakensberg, and in its rocky kloofs, where game must always have been scarce, stone implements are scarce, if not altogether absent; whilst on the lower levels of the Newcastle district, which even in the memory of middle-aged colonists swarmed with countless herds of antelope, we find abundant traces of the stone period. The conclusion which I have arrived at is that the users of the stone implements found in the more recent of the superficial alluviums were not separated from the present day by any great lapse of time.

I have divided the specimens from the Buffalo river valley, which I have brought here this evening, into several series—quite an arbitrary arrangement, and without the slightest intention of any system of classification, but merely as an illustration of the prevailing types.

The rude flakes and worked stones in these deposits greatly exceed in number the more finished implements. I have picked up hundreds of such objects without finding a fairly-worked implement. The series now exhibited gives a fair representation of the ruder class. In the Royal Artillery Museum, in the Rotunda at Woolwich, there is a series of implements, forty-one in number, collected from a kitchen-midden near the mouth of the Great Fish river, South Africa, by Colonel H. Bowker, and presented by him in 1866; I have compared a series of these ruder stone implements from the Buffalo river-valley alluviums with those from the Fish river kitchen-middens, and it would, I think, be impossible to separate the two series if mixed together.

The second series of objects from the Buffalo valley alluviums is a selection of the most highly-finished implements that I obtained; they are all very much of the same type—flake-formed spear-heads, with secondary chipping, very often rounded off at the base.

Third, a series of implements of flattish round form, and with secondary flakings—a very common type.

Fourthly, an assemblage of implements of which I did not obtain a series, or, in other words, less common types. I might have brought a very much larger collection for exhibition this evening, but this is a fair representation of the stone implements of the Buffalo valley between Newcastle and Rorke's Drift. It is observable that the majority of the implements are encrusted with the lime deposit which is so persistent a feature in these alluviums.

Zululand.—The four ferruginous-stained implements, which are exactly like those obtained from Rustenberg in the Transvaal, were found by me, on a small abraded patch of a few square yards at the base of the hill of Isandulana. The exact spot was about the centre of where our camp stood on the fatal day in January, 1879, when our troops were overwhelmed by the army of Cetewayo.

These objects were resting on a ferruginous base so common in South Africa, the superincumbent alluvium having been removed by sub-aerial degradation. The other twelve specimens, marked as from Zululand, were collected and given to me by Colonel Curtis and Captain Pennefather, of the Inniskilling Dragoons, who gathered them along a line of march from near Utrecht to the Inlazatche Mountain; it would be difficult to separate these specimens from a similar number picked up at haphazard from the alluvium of the Buffalo valley in Natal.

Estcourt, Natal.—The group of implements here exhibited, and derived from the valley of the Bushman river, close to the town of Estcourt, was collected by me in February, 1881. The exact spot is on the right hand of the Bushman river, about 200 yards below the bridge. The river there runs over a rocky channel, but has cut its course through beds of higher-level alluviums, which may be seen resting on the rocky banks. At the place where I made this collection of implements the river, when in flood—which was the case when I was there—rose just to the level of the alluvial deposit; evidently at times still higher floods invade these beds, for a portion of the bed, at the point I visited, had been undermined for some distance, and from the *débris* I collected in the space of an hour the group of implements now exhibited. From the position of the bed from which these implements were derived—very little, if at all, above that of present highest flood—it may, I think, be inferred that the formation is a recent one. That the implements themselves should show so little sign of abrasion is remarkable, for the major portion of them are formed of comparatively soft materials. Two of the weapons are worked on both sides, and are comparatively highly finished; but the collection, taken as a whole, shows a general *facies* with that from the Buffalo river valley.

Pietermaritzburg, Natal.—I failed to find stone implements in the more ancient and deep alluviums, which are worked for brick-making in the vicinity of the capital of Natal. Such deposits occupy a considerable extent in the vicinity of the city lying between it and the range known as the Town Hill, and forming a considerable part of the low-lying area of the city. On the other hand, as elsewhere in Natal, the superficial deposit now lying in the hollows and depressions of the district, south, east, and west of Pietermaritzburg, yielded implements; but the calcareous marl with nodules is the usual matrix, and the ironstone band is the limit, beneath which it is hopeless, as far as my experience goes, to look for stone implements. I have likewise found a few implements in very recent gravels of the Umsindusi rivers, near Pietermaritzburg, which are now liable to submersion in periods of excessive floods.

Several of the specimens from the neighbourhood of Pietermaritzburg, which are on the table this evening, would be called palæolithic types by some of the gentlemen who have written on the South African stone period; but I took them out of deposits which likewise contain what would be classed as neolithic types by Messrs. Gooch and Griffith.

On several occasions I have found crystals of quartz in company with stone implements in alluviums, and I have here one as an example; but their significance for some time did not strike me. When I reflected, however, that they all showed traces of wear, and are as much erratics in the alluvial deposits as the stone implements themselves, I came to the conclusion that the stone-age people had carried these crystals either as charms or ornaments. Shortly before leaving South Africa I met with a method of securing crystals amongst the Kaffirs, which doubtless throws light on the dispersal of similar objects in the stone implement-bearing alluviums.

The case in point was in a necklace of charms from the Zulu country; it contained an assemblage of objects such as crocodile and leopard teeth, pieces of roots, feathers, &c., but depending from the centre of the string necklace was a crystal of quartz over 2 inches in length, ingeniously mounted in the skin of a lizard's legs; the tough skin of the reptile's leg had evidently been drawn when fresh over the crystal, and by contraction in drying had formed a strong and effective mounting.

Its owner placed such a high value on this string of charms that I was obliged to forego the possession of it.

In connection with this wearing of crystals by the stone-age people, I have a suggestion to make which perhaps may some day bear fruit. As these stone-using tribes of hunters appear to have been interested in rock-crystals as objects of adornments,

or as charms, it is probable that the more beautiful and striking crystallisation of the diamond would attract their attention; consequently I should not be surprised to hear that searchers for stone implements among the alluviums of the diamond-producing districts of South Africa were rewarded by finding diamonds that had been used as ornaments by the stone-age people.

Bushman Rock-Shelters.—Though I have visited several such shelters in the Drakensberg, which from the numerous paintings on the roofs and walls must have been occupied by these people, I never discovered in them any stone implement, or any article of man's manufacture which might not be attributed to the Kaffirs now residing in the neighbourhood. I believe this is owing to the natural disintegration and crumbling of the rock through weathering, the drifting in of leaves and wood, the presence of goats who have sought shelter therein, the scratching of rock rabbits and other animals, all of which have combined in depositing a layer of soil over the floor occupied by its Bushman inhabitants. No doubt these rock-shelters, when properly examined by competent persons, will afford most interesting results, and—I hazard the opinion—will show a close connection between the users of the prehistoric stone implements and the Bushman.

The fidelity to nature of the Bushman artists is very striking; there is no difficulty in recognising the species of animals represented, and in some instances I have seen charging animals, surrounded by the hunters, foreshortened with true artistic skill. These drawings are abundant in some rock-shelters on the side of Majuba Mountain, Natal, not far from O'Neil's farm, and are peculiarly interesting, because there the Bushman artist has given us in his paintings a clue to the date when they were executed.

In several instances we see animals, such as buffalo and leopard, attacked by hunters, and so accurate has the artist been in his detail that we can unhesitatingly declare to what race these hunters belonged. Undoubtedly they are meant for Kaffirs—tall, lithesome, black men, carrying their long oval cowhide shields, a bundle of throwing assegais, and casting their weapons into the animals; but to make assurance doubly sure we find, in the top corner of the representation, little black objects, with bows and arrows held athwart their bodies, and looking down upon the hunters. The artist has undoubtedly depicted his race, when driven from the low-lying lands swarming with game, to the fastnesses of the Drakensberg, and the little Bushman holding the bow and arrow is watching from the mountain the deeds of his implacable foe, the iron-using Kaffir.

Mr. John Sanderson, in the paper I have already quoted, gives his reasons for supposing that the intrusion of the great Kaffir

family into the countries from Delagoa Bay, to the present limits within the Cape Colony, may approximately be said to have taken place in the sixteenth and seventeenth centuries. So that, though the paintings in the rock-shelters of Majuba Mountain may be of a far more modern date, they cannot, owing to the introduction of Kaffir portraits, be over three hundred years old.

Mr. Rickard¹ classes the various subdivisions of the South African neolithic period as—

Early Kitchen-midden period;
Cape Flat period;
Late Kitchen-midden period;
Bushman period;

but in commenting on Bushman caves and rock-shelters, he anticipates that it may eventually be necessary to associate Bushman relics with one or more of the other groups, and he further on expresses his surprise that the kitchen-midden periods have not yet supplied us with any of those drawings, for which the Bushman is celebrated, and that no objects have been found in them which could fairly be described as corresponding to the well-formed arrow-heads of Europe, and adduces from this the supposition that the bow is a comparatively recent acquisition of the Bushman.

The non-discovery of Bushman paintings in kitchen-midden deposits may be easily explained from the very remote probability of such designs ever having been included in such formations, and even if they had the pigments with which these paintings have been executed would soon disappear from off a stone buried in a midden, subjected to damp and rain; whilst further, there is no evidence to show that the Bushman exercised his painting capacity elsewhere than on the walls and roofs of his rock-shelter.

The "well-formed arrow-head of Europe" (I presume Mr. Rickard means by that the tanged neolithic implement) may be absent from South Africa, yet arrow-heads are to be found in abundance, though often, from their extreme rudeness, they are liable to be overlooked. I have brought here two series of arrow-heads, gathered by me from various localities in Natal, but all of them from the calcareous marl deposits; I have also brought drawings of iron-tipped arrows and weapons used by the modern Bushman, and one glass arrow-tip flaked by the Bushman of Basutoland, from the base of a glass bottle. Colonel Bowker informed me that, on revisiting spots where he and his escort had encamped in Basutoland, he found evidence

¹ *Loc. cit.*, p. 27.

of the Bushman having been employed in fashioning arrow-heads from discarded soda-water bottles.

A comparison between the arrow-heads used by the modern Bushman and the prehistoric stone arrow-heads leaves little doubt of the close relationship between the older and more modern forms. I cannot, therefore, agree with Mr. Rickard's suggestion that the bow may be a comparatively recent acquisition by that people.

In bringing my remarks to a conclusion, it may be as well to remind the meeting how few observers—perhaps not more than a dozen in all—have paid attention to the distribution of stone implements in South Africa, and that their researches have been rewarded by the discovery of such remains from localities widely apart, and dotted over the continent of South Africa, south of the twenty-fifth parallel. We may therefore conclude that stone implements are of general distribution over this great area, and that the stone-using peoples must have occupied the country for a long period, or else have been very numerous. Possibly the stone age existed for a lengthened term in South Africa, and may resolve itself into palæolithic and neolithic periods; but at present we have hardly sufficient data at command to enable us to arrive at definite conclusions, and until observations have been greatly extended, and collections from many different localities, and deposits of various ages, have been brought together, we should be cautious in accepting sweeping generalisations.

Mr. Gooch, in the maps published along with his interesting and valuable paper in the "Journal of the Anthropological Institute," has not hesitated, even with our scanty knowledge, to illustrate the range of stone-age periods, geographically and definitely, on the map of South Africa, and he has also had the hardihood to account for the finding of more highly-finished stone implements in the neighbourhood of Capetown, by an "ingraft" of "neolithic" skill from without. In my opinion, we are very far from being in a position to draw such conclusions. We at present know very little about the stone periods of South Africa; but this much I feel sure of, that researches in South Africa will be attended with most interesting results, and in all probability a scientific examination of the rock-shelters of the Bushman will show that the stone age of that people inosculates with that of the prehistoric races whose weapons are before us this evening.

DISCUSSION.

Mrs. CARRY-HOBSON verified Major Feilden's remark as to the greater number of arrow-heads and other stone implements being

found on the large plains that had formerly been the hunting grounds of the aborigines. She remarked that she had herself found upon one of these plains, forty-five miles south of Graaff Reinet, what seemed to have been a small factory of arrow-heads; numbers of broken and spoilt flakes lay strewed about, and near them a piece of dark basaltic rock, from which they had evidently been chipped, and which must have been brought from the mountain-range thirty or forty miles distant, the rocks of the district probably not being deemed of sufficient hardness; whilst spear and arrow-heads, mullers, and the digging-stick-heads are still turned up by the plough on the lands of the farmers in the Karoo.

Miss A. W. BUCKLAND said she looked with especial interest upon the specimens of stone implements from the Transvaal—that being an almost unexplored region, although evidently containing many traces of vanished races, among which might be noticed the remains of ancient mining works near Lydenburg, in the vicinity of which, she had been informed, were also to be found graves of a peculiar form, certainly not of Kaffir origin; and in view of the extended mining operations about to be undertaken in that part of the country, she ventured to suggest the advisability of making one of the mining engineers a corresponding member of the Anthropological Institute, in order that any remains of antiquity found might be properly examined and described.

Mr. A. L. LEWIS understood the object of the author was chiefly to protest against the division of the African implements into periods, especially such as the palæolithic and neolithic of Europe, and he was much disposed to agree with him. The great gap alleged to exist between the two periods in Europe would probably be filled up in course of time, and though the majority of the works of each period could readily be distinguished, there were specimens concerning which, if found away from their proper surroundings, no one could say which period they belonged to. If this were the case in Europe there seemed to be no reason whatever to import the possibly artificial distinction between palæolithic and neolithic into Africa, where the geological conditions were so very different. The specimens exhibited by Major Feilden, though resembling sometimes palæolithic and sometimes neolithic types, were, as he stated, found under similar circumstances; and though one was said to have been found under 20 feet of alluvial soil, there seemed every probability that that deposit was comparatively recent, the action of water being much greater there than here. Mr. Lewis then commented on the details of some of the specimens exhibited, and compared them with some from his own collection.

Mr. W. G. SMITH remarked that, judging from the stones themselves, apart from the circumstances of their finding (which, as regarded the palæolithic types, the author was unfortunately unable to give), there appeared to be two very distinct series of implements upon the table—one neolithic, in several instances showing remarkably neat and skilful secondary chipping. All the neolithic forms, he said, could readily be matched with European examples.

With regard to the palæolithic types, he thought there were several reasons for looking upon them as antiquities of palæolithic age. In the first place the form was exact, and he could produce duplicates of all, both from Europe and India. It was well known that neolithic examples sometimes approached palæolithic forms, but experienced archaeologists would seldom mistake one for the other, as there was a different general *facies* in the two, but difficult to express in words. Again, the implements, he understood, were made of a sort of indurated slate, and if so, they had changed colour, since they were made exactly like the Madras implements, which were commonly made of a deep grey quartzite, but when now found were red from contact with the laterite. A third reason for their probably palæolithic age was their abraded and worn condition; in one example the amount of abrasion was great, and agreed with many European and Indian examples; this abrasion indicated that they had probably been moved for a considerable distance with other stones by water.

MR. HYDE CLARKE said the paper of the gallant officer was not only of interest as a direct contribution to the knowledge of the stone age in South Africa, but also from the remarkable circumstances under which that information was obtained—on the march, in the battlefield, and through the perils and vicissitudes of war. When they observed how narrow was the zeal for anthropology shown at home, it was an encouragement to witness the devotion to science of their military friends. It was of value to know that the military museums were enriched with specimens of anthropology. With regard to the buildings and workings at the gold mines, without denying the possibility of their being Portuguese, he would hesitate to make such a positive assignment in the absence of adequate investigation. The stones were not, to his knowledge, of Portuguese character. As to the mine-workings, he would observe that in Portugal, in the Iberian Peninsula, there were ancient workings, from which the Portuguese had learned, not only of the Roman epoch, but still more ancient than the Romans—of the prehistoric gold-workers. If the workings were Portuguese, he would suggest that the tombstones mentioned by one of the speakers might be of miners brought by the Portuguese from their Indian settlements.

The Rev. C. T. PRICE read the following paper on behalf of the author, who was on the eve of sailing for Madagascar:—

NOTES on RELICS of the SIGN and GESTURE LANGUAGE among the MALAGASY. By the Rev. JAMES SIBREE.

DURING the last few years considerable attention has been paid by European and American scientists to the sign and gesture language of mankind, and information on the subject will be found

in the works of Siccard, Krause, Scott, Burton, Long, Lubbock, and Tylor. Systematic attempts are also now being made by the officials of the Bureau of Ethnology of the Smithsonian Institution at Washington to gain information from all parts of the world on this branch of ethnological inquiry. As far as is yet known this very primitive form of communication between men appears to have been most fully developed among the North American Indian tribes; at any rate they have retained it up to the present day in a more complete state than is now found in other countries, so that long and complicated narratives, with very minute detail, can be imparted with perfect accuracy. All nations, however, even the most cultivated, and those among whom oral speech has been most perfected, have retained vestiges of this primitive habit of mankind, and in forced and impassioned address, gesture, as we all know, is unconsciously used to add to the effect of articulate language. The "action, action, action," of Demosthenes is the resort of all speakers when wrought up to an unusual pitch of excitement; but among many tribes of the human family it is not merely the accessory of speech, but, in certain conditions, constitutes speech itself. From what is already known of the habits of many races in this respect, it is certain that relics—more or less full—of the gesture language exist in every nation, and, probably, most completely among the uncivilised peoples of the world.

Colonel Garrick Mallery, United States of America, of the Smithsonian Institution, in several works on this subject, has shown how important a relation gesture language bears to ethnological study, as well as to that of language. It is a significant fact that many of the most widely practised gestures of the American tribes are almost exactly those which are used by deaf mutes, showing that there is a natural fitness in many gestures to convey ideas; and thus, as Colonel Mallery observes, the study of their gesture system may "solve problems in psychologic comparative philology not limited to the single form of speech, but embracing all modes of expressing ideas." It is believed that in ancient times "all the inhabitants of North America practised sign language, but with different degrees of expertness," and that signs, constituting as they do a natural mode of expression, do not readily change in their essentials among widely-separated peoples, and in different ages of the world. The result of the comparison between the sign language of the North American Indians and that of deaf mutes is, that these, together with the gesture system of all peoples, constitute together one language—the gesture speech of mankind—of which each system is a dialect. It will be thus seen that this study is an interesting aid to ethnologic and archæologic re-

search, as revealing a stage of progress once passed through by our ancestors, and in discovering religious, sociologic, and historic ideas presented in signs and gestures—a branch of research which has been applied with great success to the radicals of oral speech.

As Colonel Mallery is very desirous to enlist the co-operation of all observers residing among little-known races, in order to collect facts from a wider basis than has yet been practicable, I have here noticed, very briefly, two or three of the more important results which are served by such studies. And in order to make a commencement of such noting of facts, in reference to signs and gestures among the different Malagasy tribes, as well as to draw attention to the subject,—not by any means as professing to give a full account of what might be collected,—the following particulars may be recorded as relics of the gesture and signs accompanying oral speech among the Hovas of Central Madagascar.¹

1. One of the native customs which will probably soon strike a foreigner coming into the country is that which is made use of in passing in front of a superior, or, indeed, any one to whom respect is due, or is desired to be paid. This is chiefly, though not exclusively, observed indoors, and consists in the person passing in front of another, who is usually sitting, bending the body low, and, with the right hand extended and nearly touching the ground, generally using at the same time the words *Mbay lâlana, Tompoko é* ("Allow me to pass, sir"). These words are also used, with or without the bending of the body, &c., when walking along a public path, and passing any one sitting at a door, or window, or on the *fijeréna*, or elevated seat above a boundary wall. I have not heard any explanation from a native of the meaning or origin of this particular gesture; possibly it may be now lost. But the Hovas look with scorn upon those who neglect such acts of politeness, saying of them, contemptuously, "He passes on like an ox, and does not say, 'Let me pass.'"

2. Another expressive gesture among the Hova Malagasy is that which is used in presenting *hàsina* (the dollar of allegiance), or any other present to the sovereign, or to the representative of royalty. At the close of the speech of formal complimentary phrases, the speaker stretches out both outspread hands, with the palms outward, and, bending downward and forward, raises his hands towards the great person addressed until they are

¹ As this short paper is written in England, without any opportunity of consulting native Malagasy, it is necessarily much less full than it might probably be made had there been a possibility of making inquiries among the people.

about level with his head. This appears a very natural and significant gesture when making an offering.

3. A sign of still more profound respect than is shown in the foregoing gestures is preserved in the phrase for abject submission still in common use, viz., *mildla-paladra*. The literal meaning of this is to "lick the sole" (of the foot). Among the Hovas this is now only a phrase, but up to a comparatively recent period the act it described was one in common use as a token of respect from slaves to masters, wives to husbands, and from inferiors generally to superiors. Robert Drury, who lived as a slave in the south-western part of Madagascar from 1702 to 1717, describes himself as frequently performing this act of homage, and seeing it constantly rendered by others. Scriptural parallels (*cf.* Isa. xlix, 23; lx, 14; Luke vii, 38) will occur to all readers of the Bible, as well as the homage paid by Roman Catholics to the Pope by kissing (not his toe, as commonly said, but) the cross on his slipper.

4. There are several Malagasy customs connected with royalty which are significant outward acts, although, perhaps, not strictly to be reckoned as portions of the gesture language. Among these are the shaving of the head by the whole population at the death of the sovereign; the wearing at royal funerals of the *lamba*, or outer loose robe, below the armpits instead of over the shoulders, so as to leave the upper part of the body uncovered; and the turning out of the way and baring the head when any royal property is carried along. The bent of mind among the Malagasy leads them to use symbolic acts,¹ as well as to the profuse employment of figure and metaphor and parable in their public speeches and more formal addresses.

5. One can hardly be long in Madagascar without observing that the people use a different motion of the hand in beckoning another to come near than we employ in similar cases. They do this by stretching out the hand with the palm *downwards*, moving the fingers toward them, instead of turning the palm *upwards*, as we should do.

6. Again, in pointing out the position of anything near to them, the Hova will not usually trouble himself to do so with the hand, as we usually do, but motions towards it with the *mouth*, stretching out the head, and protruding—in an ugly enough fashion certainly—the lower lip in the required direction.

7. Another point to be here noted is the act which takes the place which *kissing* occupies among Western peoples. The kiss seems almost unknown among the Malagasy, except as introduced by Arabs and Europeans, and its place is taken by nose-

¹ See "Great African Island," pp. 332-334.

rubbing, or rather of nose-pressing, a custom, as is well known, widely used by uncivilised peoples, and apparently a relic of a very primitive habit of recognising another person by scent or smell. The native word for this is *mandroka*, a verb derived probably from the root *drana*, nose (Javanese, *irong*; Celebes, *wrong*), the terminals *na* and *ka* being often interchangeable. The shaking of hands is not a native custom, but is being largely adopted where foreign influence prevails.

8. In a recently published journal of a missionary tour along the east coast of Madagascar, Mr. G. A. Shaw says: "Only a short time since, in a village in the south, pressure from the Hova being brought to bear on some Bétsimisarakas to send their children to a school which was in the same village, the women went about with their hands clasped on their heads (a Bétsimisarakas sign of grief), bewailing the loss of their children." In their ignorance of the milder Hova rule of recent times, they supposed that school training was only a preliminary to government service, as in the time of the first Radama (1810-1828).

9. A piece of gesture language seems to be preserved in the Malagasy word for "blessing," or "benediction," which is *tsò-dràno*, literally, "blowing water." This act appears now to be almost, if not quite, obsolete among the Hova; but the word still commonly employed doubtless preserves the remembrance of an act formerly used by them in pronouncing a blessing. Some light seems to be thrown upon this custom by a very similar one described by the Rev. Dr. Turner, for more than forty-two years a missionary in the Samoan Islands, in his "Nineteen Years in Polynesia" (Snow, London, 1861, p. 224). In case of disease attacking a Samoan, the high priest of the village sometimes told the sick man's friends "to assemble the family, 'confess and throw out.' In this ceremony, each member of the family confessed his crimes, and any judgments which, in anger, he had invoked on the family, or on the particular member of it then ill; and, as a proof that he revoked all such imprecations, he took a little water in his mouth and spurted it out towards the person who was sick. The custom is still kept up by many."

POSTSCRIPT.

Since writing the foregoing it has occurred to me to send a copy to several Madagascar missionaries now in England on furlough, and ask them for any suggestions and further particulars. All have responded very kindly to my request, and to my friends the Revs. J. Peill, C. T. Price, and J. A. Houlder, and Mr. J. C. Thorne, I am much indebted for the following

additional facts connected with sign and gesture language amongst the Malagasy, which I had not remembered when writing the first part of this paper.

In the ordinary salutation of the Hova, *Mando akôry hianô*? ("How dost thou do?") the head is usually thrown up instead of bending it down. In expressing astonishment, usually with the word *Odré!* ("Dear me!" or "Oh dear!") the fist is frequently held to the mouth. As Mr. Thorne remarks, the meaning of this gesture must have been originally to conceal a laugh, as it is also used when something funny has been said. In challenging, or expressing defiance, the *lamba*, or flowing outer garment, is waved about in the air. Although hardly gestures, strictly so called, there are sounds used by the Hova on certain occasions which are not speech. These are a kind of "click," made by the tongue, and employed to express admiration or approval of public speeches; and a deep humming sound, somewhat like "hoo, hoo," used when the sovereign is passing as a salutation to her. To spread a clean mat on the ground when the stranger enters the house is a usual sign of welcome. (Rev. J. Houlder.)

Mr. Price remarks that among the Betsiléô, the gesture referred to in paragraph 1 (*ante*) is carefully observed along the roads with the shortened form of address, *Ombây*, or *Ombâko*. It implies respect, and especially *humility*, and is termed *manjôko*. Even in a church superiors expect an inferior or younger person to show this mark of respect when passing. (2) The second gesture noted above is used every Sunday in the Royal Chapel, after the prayer for the Queen, or the playing of the National Anthem; also by the troops in distant parts of the island, who turn towards the capital and thus salute their distant sovereign, when the national air (which is simply our "God save the Queen," by them curiously altered to *Toidikinina*!) is played by the band. It is also used to other persons in giving thanks, as to a senior or superior when any special respect is desired to be shown. (3) With regard to the third (*Milêla-pâladiâ*), Mr. Price says, "This may not now be literally performed, but that it is still more than a phrase I know from the fact that an old woman once, in begging me very earnestly to grant her some request, said *Milêla-pâladiâ*, &c., and at the same moment stooped down and stroked my boots with her hand, and very unpleasant it was." Mr. Peill also says of this custom that "it is scarcely true that it is now merely a phrase among the Hova, as I have seen it actually done. Queen's messengers sent out to a certain village were not, as they thought, received with proper respect; they therefore left the village without having delivered the royal message. The chiefs of the village were dreadfully afraid, and followed after the Queen's messengers

with their hair all down (that is, with the numerous small plaits and knots unloosed) over their shoulders, dishevelled, and their *lambas* down below their shoulders.¹ When they reached the royal messengers they at once fell at the feet of the principal one of them, a judge, and actually kissed or licked his feet, at the same time humbly begging his acceptance of their repentance. He yielded to their request, and returned with them. I have no doubt that while much less frequent than formerly was case, the custom is still occasionally observed."

Mr. Price further remarks: "For what purpose do all the people, sometimes when there is a great *kabary* (public assembly), and the Queen appears, put down their umbrellas? It has been said that they do so whenever the Queen spits, but whether that is a joke or not I cannot tell. More ridiculous customs are quite credible." "The use of the fingers in 'totting off' a number of heads or points in a discourse of private conversation is very remarkable. They do not merely touch the left-hand fingers on the *side* with the right forefinger, but holding the left hand out palm upwards, they pull up and lay over flat on the open palm the fingers one by one."² "In descriptions of persons, things, events, &c., they often take up little bits of stone or stick, or anything that is to hand, and lay them out in order to represent the different people, things, events, ideas, heads, &c., about which they are speaking. Frequently they make the talk much more emphatic by these means." "A loose woman may sometimes be known (*i.e.*, when she is plying her trade) by her going about the streets with her face covered with her *lamba*. I remember one case in which it was made a reproach to a woman that she, a stranger, walked through a certain town to the house at which she was to stay, 'with face covered like a harlot'" (*cf.* Gen. xxxviii, 15). The *lamba* is also used to denote other feelings: "Note the covering of the lower half or more of the face with the *lamba* when a person is sulky or sullen, squatting on the ground in silence. Here they may do this when they are simply lazy and not sulky, but they always do it when they *are* sulky." The covering of the mouth is also indicative of modesty or shame, often further shown by uncovering the feet and lower part of the legs. In giving assurances of loyalty and obedience at a public assembly the speaker often dances, flourishing his spear or sword, and throwing off the *lamba*. "This is intended to express rage at and

¹ These two acts are done not only at the death of a sovereign, but also at those of relatives and friends, and occasionally even the head is shaved. The hair is dishevelled for a long time, and children in the schools, and adults in the congregation, refuse to *sing* at all for a long time after the death of a relative.

² Malagasy children very frequently count on their toes, instead of their fingers.

defiance of an imaginary enemy." Mr. Peill adds: "At the end of a period (i.e., of a public speech) they jump clean from the ground, and coming down stamp with both feet together on the ground, in order to emphasize what they are saying." "In walking together, friends do not go arm-in-arm, but hand-in-hand, or the hand of one may be thrown round the other's shoulder or round the waist." "The Bétsiléo in saluting a superior do not make the same gesture as the Hova. They bend forward and make a sort of scrape, at the same time laying hold of the forelock and tugging at it."

Mr. Peill remarks: "In pointing to an object some distance away, I have often noticed that the Malagasy point the finger far higher than Europeans under like circumstances would do. They point in the direction of the thing to which they wish to call attention, of course, but up to the heavens in that direction, not towards the earth." "Another custom illustrating this subject is the *mâmpitaha*, one wife imitating another to show that she is equally clever, both with her hands and feet. I have watched young girls engaged in this game with great interest and amusement, and I imagine that apart from the general object of the elder wife showing that she is equally clever with the younger, each gesture conveys some definite idea to the natives, illustrating the things in which the one is supposed to equal or excel the other." "I have seen Malagasy women, on receiving news of the death of a near relative, throw themselves flat on their faces on the ground, and creep towards the bearer of the message, at the same time rolling in the dust, and tearing their hair in their grief."

Mr. Thorne points out that there are many symbolic acts used by the Malagasy, which are somewhat connected with signs and gestures. Among these are the *kiddy*, or sign of ownership, or possession, or protection. This is, in fact, a mark of *tabu*, or *tapu*, and is usually a tall, upright stick, with a bunch of grass fastened at the top, and stuck into the ground; although how this came to signify possession needs further inquiry. Something similar to this is practised by bearers, who often come before a journey is made and tie a piece of grass round one end of the palanquin pole to signify that they are engaged for it and will claim to carry. A road or path is also *tabu*-ed by putting a stick or sticks across it to signify that those in the rear are to avoid it. Mr. Thorne further remarks: "Symbolic acts must at one time have been much more numerous among the Malagasy than at present. One naturally thinks of the piece of wood sent by Andriamanalina of Bétsiléo to Andrianômpôina (King of Imérina), as his *refy* measure (about 5 feet 8 inches to 6 feet, a measure formed by stretching out

the arms and hands as far as they will reach); and of the large *lamba* on which Andrianimpòina killed the bullock, not one drop of whose blood fell outside it, and of the *lamba* afterwards sent by him with a hole cut out of the middle.¹ Also of Andriamampandry's symbolic teaching of Andrianàsinavàlona. Among symbolic acts still customary I have thought of the following:—Spitting on noticing a bad smell (perhaps rather a sensible sanitary precaution); *Ny mitsòngo dia* (lit., pinching the sole), symbol of a desire to share in another's good fortune; *Ny miàla fàditra*² (throwing away some object which has a supposed connection, often merely verbal, with disease or calamity), symbol of a desire to be rid of some calamity; *Ny misòtro vòvoka*³ (drinking water mixed with dust from a royal tomb); and *Ny mivèly ràno* (striking water with a spear, at the time of taking an oath to the sovereign), symbol of allegiance."

DISCUSSION.

Mr. HYDE CLARKE said the paper of Mr. Sibree was of the more value to the Institute because gesture language had at various times occupied the attention of its members. Mr. Dunbar Heath had dealt with the question of an epoch when man was speechless, and Professor Graham Bell had given in their rooms an illustration of deaf mute language and Indian sign language, which, unfortunately, did not admit of reproduction in the "Journal." The paper of Mr. Sibree referred rather to gestures used in connection with speech than to independent sign language, but it would be most welcome to that distinguished labourer, Colonel Garrick Mallery, because many of these single gestures gave the clue to survivals. Many of their most valuable contributions came from missionaries, and now that these had been led into the field of anthropological investigation they were able, as in this paper, to bring to bear a large store of illustrative material. Nose salutation was of anthropological importance, because it was a custom widely observed; whether it had any connection with a practice of smelling he should not like to affirm. We know that many gestures, notably among American aborigines, are imitated from totem or other animals, and he believed that this was used by the lion as it certainly is by the cat, but with no function of smelling. In connection with gesture language also, there are associations capable of explaining nose-rubbing as a salutation. As to the general question of sign language, he would observe that all his observations induced him to believe that the invention and diffusion of speech language as a separate institution appeared to be represented by the series of traditions known as the Deluge traditions. Such referred to a new diffusion of men and institutions by strangers who came by water; but the Deluge was to be regarded

¹ Referred to and described, together with other examples, in "The Great African Island," pp. 332-334, as already noted.

² *Ibid.*, p. 303.

³ *Ibid.*, p. 284.

as one of those inversions of tradition resulting from afterthought and suggestion of a cause. The relation between sign and speech language appeared to rest, as he had stated, for its origin, on the connection noticed by Mr. Alfred R. Wallace between the employment of a nasal, as in English, for the nose, of a labial for the mouth, and of a dental for the teeth. The associations of the groups of ideas in speech, as developed by himself, were such as had their origin in sign language, and were illustrated by characters probably anterior to speech. Mr. Sibree's communication was the result of the effort of Colonel Mallery to obtain information in every quarter, and he (Mr. Clarke) had just learned that Captain Stab, acting on his invitation, was preparing for the United States department a paper on the mutes of Constantinople. Unfortunately, like himself, Captain Stab, not having been aware of the value of observations of the mutes, had to depend on his memory, but it was to be hoped he would some day prosecute investigations on the spot. In his own conversation with the mutes it had been established by a conventional and tentative process, such as described by Professor Graham Bell as to his conversations with a French deaf mute at Paris. He himself had not conversed in the regular language of the mutes, and only comprehended its nature generally, and by the results. The mutes of the Seraglio had undoubtedly conventional signs among themselves for the cities and provinces of the empire, for foreign countries, and for individuals, and were fond of communicating with each other political intelligence of which they were reputed to be the earliest possessors. They conversed most rapidly, and to all appearance and probability, more rapidly than by speech. There was this singular circumstance, which he had before stated, that lip-reading was an established institution with them, and in this way those who were deaf acquired their information from the minister when they were supposed not to hear. When a mute was not able to make him understand who was the man referred to by a sign, he endeavoured to communicate the name by his lips, as Mahmud, for none of them were able to write. One of them was reputed to have made and lost considerable sums of his savings by speculating in Caisse paper money. He himself adhered to his proposition, that the mutes of Constantinople represented the pantomimes of the classic writers, and that was the reason for his efforts to obtain information, and to induce Colonel Mallery to do so, as there was a possibility of the survival of an ancient sign language, which would throw light on the others. The Romans evidently understood sign language as many of the Turks do, because at the theatre the subject of a play by Plautus or Terence would be recounted in gestures by a pantomime, and it had been proposed to use pantomimes as interpreters among the tribes of unknown tongue in the African wars. He proposed a vote of thanks to Mr. Sibree for his valuable contribution.

JUNE 12TH, 1883.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

- From the AUTHOR.—*Otrepanovaných lebkách předhistorických nalezených v Čechách.* By Dr. J. Kopernicki.
 — *Czaszki i Kósci.* By Dr. J. Kopernicki.
 — All the Articles of the Darwin Faith. By Rev. F. O. Morris.
 — Notes on Copper Implements from Mexico. By F. W. Putnam.
 — Ueber den Menschlichen Kiefer aus der Schipka-Höhle bei Stramberg in Mähren. By Prof. Dr. H. Schaaffhausen.
 From the MINISTER OF INSTRUCTION, GUATEMALA.—Informe que el Jefe de la Seccion de Estadistica.
 From the ACADEMY OF SCIENCES, KRACOW.—Lud, Serya XV, Część. 7.
 — Pokuchie. Tom. I.
 From the GERMAN ANTHROPOLOGICAL SOCIETY.—Correspondenz-Blatt. Mai, 1883.
 From the ACADEMY.—Bulletin de l'Académie Imperiale des Sciences de St. Pétersbourg. Tom. XXVIII, No. 3.
 — Atti della R. Accademia dei Lincei. Vol. VII, Fas. 9, 10.
 From the INSTITUTION.—Journal of the Royal United Service Institution, No. 19.
 From the SOCIETY.—Proceedings of the Royal Geographical Society. June, 1883.
 — Journal of the Society of Arts. Nos. 1592-1594.
 — Journal of the Asiatic Society of Bengal. No. 252, Vol. LII, Part. 1, No. 1.
 From the EDITOR.—"Nature." Nos. 708-710.
 — Revue Politique. Tom. XXXI, Nos. 21-23.
 — Revue Scientifique. Tom. XXXI, Nos. 21-23.
 — Science. Vol. I, No. 15.
 — Scientific Roll, No. 11.

The DIRECTOR read a letter from Mr. H. Rivett-Carnac, F.S.A., on some Stone Implements found in the Banda District, North-Western Provinces, India (see last number of the "Journal," p. 117), and General PITT-RIVERS made a few remarks upon the collection of implements which had been sent to the Institute by Mr. Rivett-Carnac, and was exhibited to the meeting.

A paper on "Old Scandinavian Civilisation among the Modern Esquimaux" was read by Dr. E. B. TYLOR. This paper, with the discussion thereon, will be printed in a subsequent number of the "Journal."

Dr. E. B. TYLOR then read the following paper on behalf of the author:—

On some AUSTRALIAN BELIEFS.

By A. W. HOWITT, Esq., F.G.S.

IN this paper I shall deal with some of the beliefs obtaining in certain tribes which once occupied a large part of South-Eastern Australia, and whose scattered remnants still inhabit the hunting-grounds of their forefathers. My information has been obtained during many conversations with those tribesmen who still remain.

The following are the tribes to which I refer:—the Kurnai, of Gippsland; the Woi-worŭng, who inhabited the country north of the Yarra River; the Wolgal, of the country through which flow the Upper Murray, the Murrumbidgee, and the Tumut Rivers; the Theddora of Omer, and the Mitta-Mitta River; the Ngarego, of the Maneroo Tableland, and the Murring of the coast between Mallagoota Inlet and the Shoalhaven River; to these may be added two tribes which were allied to the Woi-worŭng, and whose men were also, as were those of the latter, called Kŭlin. Of these tribes, one lived about the sources of the Wimmera River, and the other on the Avoca River. The latter belonged to the well-known Jajowrong people, and its special tribal name was "Jŭpa-galk-wournditch."¹

I may note here that the words *Kŭrnai*, *Kŭlin*, and *Murring* are all synonymous, meaning "men," in distinction to other blackfellows whom the respective *Kŭrnai*, *Kŭlin*, or *Murring* designate "wild men," "snakes," "come-by-night," or by other similar terms of contempt or fear. *Woi-worŭng* (*worŭng*, tongue), *Wolgal* (*wol*, no; *gal*, of, or belonging to), and *Ngarego* are the names of languages which are used as tribal designations.

The Wolgal, Ngarego, and coast Murring are, in fact, all "Murring," and thus the word indicates a still larger related group, and this group is again indicated by the community of initiation ceremonies. I have used the word "coast Murring," as merely a convenient term to distinguish these people from the allied mountain Murring (Ngarego).

¹ *Jŭpa-galk*, the so-called native myrtle (*Bursaria spinosa*); *galk* = wood, or tree; *wournditch* = men, or people.

Thus, on reference to a map, it will be seen that the beliefs which I am going to describe cover no small part of the Australian continent.

The Physical Universe.—All the tribes named held the belief that the earth is a flat surface, surmounted by a solid vault—the sky. The Kurnai believed that beyond the sky there was a country inhabited by the spirits *Brewin*, *Baukan*, and the *Mrarts* (ghosts). The Woi-worung called this trans-celestial land—“*Tharan-galk-bek*,” i.e., the gum-tree country. It was believed by them to have trees, streams, and to be otherwise similar to the earth. They further believed that, somewhere in the mountains in the north-east of Victoria, the vault was propped up by poles, the rotting of which might cause the sky to fall, and the drowning of all people through the bursting of the clouds, which they regarded as reservoirs of water.¹

The Ngarego and Wolgal believed that beyond the sky (*Kū-lūmbi*), there was another country similar to the earth, with “rivers and trees.” Similar beliefs were held by the Wimmera Kūlin and the Jūpagalk.

The human individual during and after life.—The Kurnai believe that each human individual has within him a spirit, which they call *Yambo*. This *Yambo*, it was supposed, could, during sleep, leave the body; could confer with other disembodied spirits; could even wend its way to the celestial vault, beyond which lies “ghost-land.” Indeed, this belief is still held, perhaps, by all but those who have been educated at the Mission stations. With the Woi-worung, this human spirit was called *Mūrūp*. It was supposed that the *Mūrūp* could leave the body during sleep, and the exact period of departure was said to be during the “snoring” of the sleeper. It was also believed that the *Mūrūp* of an individual could be sent from him by magic, as, for instance, when a hunter incautiously went to sleep when out hunting, or at a distance from his camp. The *Mūrūp* being thus temporarily banished, and the waking of the victim prevented, his enemy was supposed to abstract his kidney fat, and thereby cause his ultimate death. The belief in the temporary departure of the human spirit during sleep still exists in the last surviving Woi-worung, after almost a lifetime of contact with the civilisation of Melbourne. Quite recently “King William” told me that the *Mūrūp* of his son, who had been taken to

¹ Buckley (“the Wild White Man”) says in his “Life and Adventures” (John Morgan, Tasmania, 1882), p. 57: “They have a notion that the world is supported by props which are in the charge of a man who lives at the further end of the earth. They were dreadfully alarmed on one occasion when I was with them by news passed from tribe to tribe that unless they could send him a supply of tomahawks for cutting some more props, and some more ropes to tie them, the earth would go by the run, and all hands would be smothered.”

the Melbourne Hospital, where he afterwards died, appeared to his comrade during sleep, and took him "up a rope, and went through a hole in the sky." Then, looking down, said, "Tell my father I will wait for him here till he comes." William is even yet searching in the mountains of the Upper Yarra River for a block of stone covered with gold, which he had seen during sleep. As he put it, "My *Mūrūp* has not yet taken me far enough in the ranges—I have been to every place near."

The *Mūrūp* of the living was supposed to be able to communicate with other *Mūrūps*, either of sleepers or of those who were dead. It could wend its way to the sky, but not beyond it to the "gum-tree country."

I have, when treating elsewhere of the Kurnai, given instances of their belief in the reality of dreams. It may be said of the aborigines I am now concerned with, and probably of all others, that their dreams are to them as much realities in one sense, as are the actual events of their waking life. It may be said that in this respect they fail to distinguish between the subjective and objective impressions of the brain, and regard both as real events.

The human spirit became after death what we may call a "ghost." With the Kurnai it was a *Mrart*; but I am inclined to think that the *Yambo* was also generally supposed to exist for some little time after death as *Yambo*, and before it became *Mrart*; for I have heard the ghost of the dead spoken of as *Yambo*, or sometimes as *Turdi-Kurnai*, i.e., dead man. With the Ngarego and Wolgal, the dead man's ghost was *Būlabong*; with the coast Murring, *Tūlūgal*, i.e., "belonging to the dead." Taking the term "ghost" as representing all these words, I may now proceed to note some further beliefs.

I have but little to add to those of the Kurnai, as I have described them elsewhere, excepting that the ghosts were believed to live upon plants, and that they could revisit the earth at will, to communicate with the wizards, or on being summoned by them.

The Woi-worūng believed that the ghost wandered, at least for a time, in the hunting-grounds it had used when embodied, but this must, I think, have been after ascending to the sky. I learn that it was thought that, at the very first of the final separation of the *Mūrūp* from the body, it proceeded to the west, and there falling over the edge of the earth, went into the receptacle of the sun—the *Ngamat*; thence ascending in the bright tints of sunset to the sky.¹ I have an account how a celebrated

¹ This, I think, explains why the white man was called "Ngamajet." Buckley says (*loc. cit.*, p. 54) that at the completion of the burial of a man "one word was uttered *Animadiate*, which means, 'He is gone to be made a white man, but not for ever.'" This could scarcely have been the case, one would think, before

wizard pursued the escaping spirit, and returned successful, saying that he had overtaken it just as it was falling over into Ngamal, and that he had seized it by the middle, and brought it back captive under his 'possum rug. Being thus restored to the "still breathing body," the sick man recovered consciousness, and revived.

The ghost was supposed to return at times to the grave and contemplate its mortal remains. William Beiruk, in speaking to me of this, put it in this way: "Sometimes the *Mūrūp* comes back and looks down into the grave, and it may say—'Hallo, there is my old 'possum rug; there are my old bones.'" The ghost was supposed to kill game with magically deadly spears. It was even believed that where fires were left burning in the bush where hunters had cooked part of their game, the ghosts would come after they had gone and warm themselves, and consume the fragments. Finally, the ghosts were believed to inhabit the "gum-tree country" beyond the sky, or perhaps, to speak more correctly, the country which was the other side of the vault. Such beliefs as these were probably held by the Wimmera Kūlin, for it was supposed by them that a boy who saw his mother's ghost sitting by her grave afterwards became a wizard.

The Ngarego and Wolgal also thought that the ghost for a time haunted the neighbourhood of the grave, and that it could kill game, light fires, and make camps for itself. In the case of the interment, not many years ago, of a man at the Snowy River, the survivors were much alarmed during the night following the burial by what they supposed to be the ghost of the dead man prowling round the camp, and, as one of them said, "coming after his wife."

According to the old men of the Ngarego and Wolgal respectively, the ghost (*Būlabong*) was met on its departure by the Great Spirit *Tharamūlūn*, who conducted it to its future home beyond the sky.

These beliefs as to the human spirit in and after life I find to be widespread; and they are important in their bearing. The *Yambo*, the *Mūrūp*, the *Būlabong*, or whatever name we choose to take, clearly represents during life the self-consciousness of the individual. The apparent power of this self-consciousness to desert the body during sleep for a time, leads naturally up to the further belief that death is merely its permanent separation from the body. Moreover, as during dreams the "ghosts" of others who were dead were apparently perceived, the belief is

the white men arrived. Buckley, I suspect, has mixed up the old belief as to the *Ngamat*, and has given the word *Ngamajet*—i.e., one returned from *Ngamat*—as "Animadate."

natural that the individual still existed after death, although generally invisible to the living. This was brought out very clearly to me by the argument of one of the Kurnai, whom I asked whether he really thought his *Yambo* could "go out" during sleep. He said: "It must be so, for when I sleep I go to distant places; I see distant people; I even see and speak with those that are dead."

Such beliefs as these explain much that would otherwise seem unmeaning or inexplicable in the tribal burial customs. The Kurnai, as I have described elsewhere, rolled up the dead tightly, and corded him in a sheet of bark. They carried the corpse for a long period; in other words, the dead member of the group accompanied it in its accustomed wanderings. That the ghost of the deceased was supposed to accompany and watch over its living relatives is evident from the custom of carrying the "dead hand."¹ Not only was it invoked in times of danger from mortal foes, but also, as I have lately traced out, at times when calamities seemed to threaten the tribe. I learn that when the *aurora australis* was seen, all the Kurnai in the camp swung the "dead hand" towards the alarming portent, shouting such words as these: "Send it away! send it away! do not let it burn us up!"²

It seems to have been universal with all the tribes I am concerned with that the dead man was dressed in his full corroboree costume when buried, or when rolled up for transport.

The Woi-worung buried their dead in circular pits. The corpse, with its hands crossed, was corded tightly so that the knees were drawn up towards the head, and the body was usually laid on its side as if in sleep. With the dead was buried his personal property and his stone tomahawk, but, at least in the section of the Woi-worung to which William Beiruk belonged, no weapons, "lest the dead man might hurt some one." But in one instance of a noted hunter, his throwing-stick (*mürri-wün*) was stuck in the grave by his right side, "so that he might have it handy." The grave was then filled in with wood, stones, and earth.

A different practice seems to have obtained among the Kulin of the Wimmera. In this tribe the dead man was left lying in his hut for two or three days before his relatives tied him up tight; they bewailed him for about a week in all. He was then put either in a hollow tree or on a raised stage, round

¹ See "Kamilaroi and Kurnai," p. 244.

² It seems to me very suggestive that on this occasion there was a temporary reversion to intersexual communism, i.e., by the exchange of wives. This exchange is connected with a supposed impending supernatural calamity which the deceased "ancestors" were at least able to prevent, and I suspect that they were supposed to have caused it. On this view the temporary reversion to intersexual communism appears like a propitiatory or expiatory ceremony.

which his bereaved friends camped for a while. They then went away and only returned after a time, when the corpse might be supposed to have become dry. The head and arms were cut off and carried generally by his widow, if he left one, and were then probably buried with her when she died. The leg-bones were used for magical purposes.

With the Omeo Theddora the corpse was interred much as I have described with the Woi-worung; but here there was often a side chamber at the bottom of the pit, into which the tightly-corded corpse was thrust. Sometimes a sort of cave was dug in a bank for a grave. For a good instance of burial by this tribe, I am indebted to Mr. John O'Rourke, of Woolgulmerang, near the Snowy River. The account he gave me I have since verified by inquiry from one of those present. This man said as follows:—"When we were at the Snowy River one of the men died. We dug a hole in the river bank, and as we were putting him in it we thought he moved. We were much frightened, and all fell back except old Nukong,¹ who stood forward and said, 'What are you doing that for? why are you trying to frighten us?' We rammed up the hole with wood and stones and earth, and went away."

The Ngarego and Wolgal buried in the same manner; indeed, in the instance just quoted, the persons present were Theddora and Ngarego. With these latter the personal property of the deceased was buried with him—his tomahawk, his paints, amulets and magical substances, such as quartz crystals (*Io-i-a*).

The coast Murring about Broulee rolled up the dead man much as did the Kurnai; but before interring him, the corpse was laid at the root of a tall tree, up which the headman (*gommara*) climbed, followed by all the men present. He then shouted out questions to the ghost of the deceased, and was supposed to receive replies—such, for instance, as to the person who had occasioned the death.

In all these cases we find the tightly cording of the dead man, and the belief that his ghost still lingered near or revisited the spot. It seems to me not only that these aborigines believed that the ghost could follow the survivors, but also that the dead man himself, unless tightly bound and buried under tightly-rammed logs and earth, might likewise follow them in the body.² Bearing in mind the belief in the existence of the human individual independently of the body, in the power of this "spirit" to wander invisible during the sleep of the body, in the individuality as a

¹ As to Nukong see "Kamilaroi and Kurnai," p. 219.

² Buckley was thought to be a dead man named Murrangurk returned to life. He says that when the blacks found him he had a piece of a broken spear in his hand, taken from the grave of Murrangurk.

"ghost" after death, present with the survivors, yet invisible, it is easy to arrive at some of the motives which render these savages so averse to speak of the dead. In one instance, when one of the Kurnai was spoken to about a dead friend, soon after the decease, he said, looking round uneasily, "Do not do that; he might hear you and kill me!"

It is also evident that while any one might be able to communicate with the "ghosts" during sleep, it was only the wizards who were able to do so in waking hours.¹

Ghost-land.—Although the ghosts were supposed to wander, for a time or at will, in their accustomed hunting-grounds, yet their peculiar home was the trans-celestial country. Being disembodied, the *Yambo*, the *Murup*, the *Bulabong* could for the first time pass from the earthly home of the living to the celestial home of the dead.

The ghosts were indeed in this aspect the departed ancestors, and as such may be supposed to have with them the defunct headmen and wizards of the tribe. The Supreme Spirit—who is believed in by all the tribes I refer to here either as a benevolent, or more frequently as a malevolent, being—it seems to me represents the defunct headman. The *Brewin* of the Kurnai is the headman with the attributes of malevolent magic powers.

¹ I cannot resist quoting from a correspondent in Northern Queensland—Mr. J. C. Muirhead, of Elgin Downs. His statements illustrate forcibly what may be called the "theory" of death and burial with the Australian aborigines. I condense very much Mr. Muirhead's account, but I preserve as far as possible his own words:—"When a strong black dies they think that some other black has put a spell on him. The corpse is placed upon a frame and covered over with boughs. These boughs must be of some tree of the same 'class' as the dead. Suppose that he were of the Banbe class division these boughs of the broad-leaved boxtree would be used, for this tree is Banbe. Men of the Mallera class (of which Banbe and Kurgila are the subdivisions) would place the boughs over him. After placing the body on a frame, which is raised on four forked sticks, they carefully work the ground underneath with their feet into dust, and smooth it so that the slightest mark or print can be observed. Then they make a big fire close to the spot and retire to their camp. Before leaving they mark a number of trees so that this 'blazed line' leads back to the frame with the corpse. This is to prevent the dead man following them. The following morning the relations of the deceased inspect the ground under the corpse. If the track or mark of some animal, bird, reptile, &c., is found, they infer from it the totem of the person who caused the death of their relative. For all things belong to one or other of the two great classes, Mallera and Wuthera. For instance, if the track of a native dog were seen they would know that the offender was Banbe—Mallera, for to this sub-class and class does the Dingo belong."

I find that a similar practice obtained among some of the Wimmera River Kulin: With them the ground over the grave was carefully smoothed, and in the following morning it was examined for footsteps or tracks, which were held to be those of the culprit. The Jupagalk Kulin had a somewhat different practice. The wizard of the tribe or lesser tribal group watched at the grave during the night. He was supposed to see the spirit of the offender peeping among the trees and bushes at the grave of the victim; thus recognising the culprit the wizard was in a position to secure vengeance upon him by means of charms, thus bewitching him to death in turn.

The *Bunjil* of the Woi-worŭng—indeed I think I may safely say of all the Kŭlin tribes—seems to have been regarded much in the light in which William Beiruk described to me the *Ngŭrŭngata*, or headman of his tribe, “a man who did no one any harm, and who spoke straight.”

Tharamŭlŭn, or *Thrŭmŭlŭn*, or *Daramŭlŭn*, as the word is variously pronounced in the different Murring languages, was the Supreme Spirit believed in from the sea-coast across to the northern boundary claimed by the Wolgal, about Yass and Gundagai, and from Omeo to at least as far as the Shoalhaven River, in a line approximately east and west. He was not, it seems to me, everywhere thought to be a malevolent being, but he was dreaded as one who could severely punish the trespasses committed against those tribal ordinances and customs whose first institution is ascribed to him. He, it is said, taught the Murring all the arts they knew; he instituted the ceremonies of Initiation of Youths; he made the original *Mŭdji* (the *Turndun* of the Kŭrnai); ordered the animal names to be assumed by men; and directed what rules should be observed as to the food permitted or forbidden to certain persons. It was taught to the Murring youths, at their initiation, that a breach of these food rules would not only be visited with dire consequences by the *Io-e-a* (medicine) of the forbidden food animal itself, or by actual punishment by the *gommeras* who in dreams could see the offence committed; but it was taught also that *Tharamŭlŭn* himself watched the youths from the sky, prompt to punish, by sickness or death, the breach of his ordinances. These prohibitions were only relaxed as the youths proved themselves worthy, and in some cases appear to have been perpetual. In speaking to two old men (Wolgal and Ngarego) about the prohibition of certain articles of food, they said that neither of them had ever been permitted to eat Emu eggs, and on my asking what would be the consequence of their doing so, one said, the other assenting, “I could not do that; *He* would be very angry, and perhaps I should die.”

The knowledge of *Tharamŭlŭn*, and his attributes and powers, was only communicated to the youths at their initiation, and was regarded as something eminently secret, and not on any account to be divulged to women or children. It is said that the women among the Ngarego and Wolgal knew only that a great being lived beyond the sky, and that he was spoken of by them as *Papang* (father). This seemed to me, when I first heard it, to bear so suspicious a resemblance to a belief derived from the white men that I thought it necessary to make careful and repeated inquiries. My Ngarego and Wolgal informants, two of them old men, strenuously maintained that it was so before

the white men came. They said that the knowledge of the name of *Tharamūlūn* was imparted to themselves only at their initiation by the old men, and that the women then, as now, only knew of *Tharamūlūn* by the name of *Papang*. This name of *Tharamūlūn* is to them so sacred, that even in speaking to me of it when no one else was present but ourselves, the old men have done so in almost whispers, and have used elliptical expressions to avoid the word itself, such as "He," "the man," or "the name I told you of." This I have found exactly paralleled by the reluctance of my Woi-worūng informant to mention the name of *Būnjil* when speaking of his supernatural powers, although he did not show so much reluctance when repeating to me the "folklore" in which the "Great Spirit" of the Kūlin plays a part. He also used the expressions "He" or "Him," and on one occasion went so far as to substitute the Woi-worūng gesture signs, which mean *Būnjil*. He also said, when pointing out to me the star which is *Būnjil* (Fomalhaut), that when he was a boy about ten years of age, "before the white men came to Melbourne," his grandfather led him out of the camp one night, and pointing to the star with his throwing-stick (*murriwūn*), said: "You are now growing up, and will soon be able to kill kangaroos and native bears, and you will be a man; you see *Būnjil* up there, and he can see you and all you do down here."¹

Here, again, I believe that the dread of offending an unseen, powerful, possibly present, spirit, lies much at the root of the disinclination to utter the name of *Tharamūlūn* or *Būnjil*.

I found that so far as concerned the Theddora the ignorance of *Tharamūlūn* was not so complete in one sole-surviving woman as the old Ngarego and Wolgal men stated as regarded their women. The Theddora woman said, when I asked her who was *Tharamūlūn*: "He lives up there (pointing to the sky); I only know that; and also that when the boys are made young men he comes down to frighten them. I once heard him coming with a noise like thunder." She here evidently referred to that part of the initiation ceremonies at which women are not permitted to be present, and at which the *mudjis* (*Turndun*) are swung with a noise which is of course proportionate to their size and construction. I do not know what the size of the instrument was which the Theddora used, but that of their neighbours the Murring was, to judge from one which I have seen, of unusual size, and must have made a very loud roaring noise.

There does not seem to have been any restriction among

¹ This identification of *Būnjil* with Fomalhaut agrees with Mr. Dawson's statement ("Australian Aborigines," Melbourne, 1881). In a former paper, "From Mother-right to Father-right," at p. 16, I gave as one of the totems a Aquilæ. I suspect that my informant may possibly have intended to point out Fomalhaut when he showed me Altair.

the Kurnai, as to the women knowing about *Brewin*. This may be connected with the greater participation of the women in the ceremonies of initiation, which were, so far as I have observed, spoken of before them, with the exception of the three portions at which the *Turndun* was shown to the novices: this was carefully concealed from the women. No Kurnai woman ever would call *Brewin* "father"; he was dreaded as being very malignant; but according to William Beiruk, *Bunjil* was called *Mamingata* (our father) before the white men came to Melbourne.

Before leaving this part of the subject, it is important to notice, in connection with the belief that the Great Spirit inhabits the land beyond the sky, what are the stories that are told as to his early connection with the tribes. *Bunjil*, it is said, left the earth with all his people, and went aloft in a furious wind, which tore the trees up by the roots. *Tharamulün*, after teaching his people the arts which they knew, and establishing their social ordinances, died, and his spirit (*Balabong*) went up to the sky, where he has since lived with the ghosts. I have not heard any tales told about the ascension of *Brewin*, but the Kurnai have a favourite tale how the female duality *Bülüm-baukan*, and their son *Bülümtät*, attempted to steal the fire of the Kurnai, and how, being prevented by the crow and the swamp-hawk, they climbed up to the sky by a thread made of the tail sinews of the Red Wallaby.¹

The ascent of *Bunjil* in a furious wind has its analogy in the belief that *Brewin* travels in a whirlwind. To these beliefs is akin the belief of the Woi-worung that the wizards could send their deadly magical *yarük* (rock crystal) against a person they desired to kill in the form of a small whirlwind. Of the same kind is also the Murring belief that their wizards could blow the *kräguläng* (rock crystal) invisibly into their enemies. It seems to have been believed by all that these fatal magical powers were derived by their possessors from *Bunjil*, *Brewin*, *Tharamulün*, as the case might be, and further, that the wizards obtained their deadly powers when they ascended aloft to him.²

¹ I might quote other analogous tales from other tribes as to ascents made by throwing up spears and by throwing up cords; but I desire in these notes to keep within the tribal boundaries which I have indicated. All these tales will find their place in the future.

² These beliefs as to the whirlwinds are probably very widespread. The Dieri believe that their Great Spirit, *Kächi*, travels in the form of a dust whirlwind. When I first saw some of these huge columns of red dust marching rapidly across the desert country west of Lake Eyre, and long before I knew of the Dieri beliefs, I was struck by their weird appearance. They then immediately recalled to my mind the story of the Jin who escaped as a column of vapour from a vase which a fisherman had brought up in his net. Mr. Frank

The Wizards and Ghost-land.—The connection of the wizard class with ghost-land is interesting. I have said that among the Kūlin of Wimmera River a man became a wizard who as a boy had seen his mother's ghost sitting at her grave. Such a wizard was believed to be able to "go up aloft," as my informant put it, and to bring back information from the dead. The "old law" which divided the Woi-worung tribe into two classes, *Crow* and *Eaglehawk*, was, according to Beiruk, brought down from Būnjil by the wizards (*Wira-rap*). The Wolgul and Ngarego wizards could also, it was thought, ascend to the sky to interview *Tharamālūn*, and to obtain their powers from him. Among the coast Murring the headman, in his character of wizard, was trained up when a boy by some other wizard. Such is reported to me as having been said of himself by the late head *gommera*, Waddyman of Browlee; but the magical powers, the terrible "poison magic," which these *gommeras* professed to have at command came to them from *Tharamālūn* himself, with whom they professed to communicate.

Among the Kūrnai, however, the *Bira-ark*, who is indeed precisely the analogue of the *Wira-rap* of the Woi-worung, appears, so far as my information extends, to have acquired his magical powers when arrived at maturity. One of my Kūrnai informants has told me the tale, current when he was a boy, of how a celebrated *Bira-ark* became one. It was said that he first dreamed for several consecutive nights that he was present at a Kangaroo Corroboree, and that in the form of a kangaroo he joined in the amusement; following this it was said that he heard continually the distant drumming of the ghosts at their celestial corroborees; finally, one night he was missed from the camp, having been taken up by the *Mrarts* and initiated into their mysteries. The following morning he was found near the camp lying in a state "like sleep," with an enormous log across his back. Being carried to his camp he remained for some time as if asleep, singing of that which he had seen among the *Mrarts*.¹

James, now of the Victorian Police, and whom I first met with at Blanchewater, in the Dieri country, has told me how, in his knowledge, a young Dieri, having vowed to kill *Kūchi*, followed one of these dust whirlwinds for a long distance, throwing his weapons into it. He returned completely exhausted, saying that he had killed *Kūchi*, but that he felt very ill. He shortly after died, as it was believed, from the vengeance of *Kūchi*.

¹ The full meaning of the Kangaroo dream does not appear of itself. With the Kūrnai, to dream of kangaroos sitting round the sleeper was to receive a warning of impending danger. The Woi-worung and the coast Murring held the same belief, but with the latter it was also the actual animal that gave warning to the man who bore its name. I learn that in this tribe each man's totem could give him warning of coming danger. My informant's totem name being Kanalgar (Kangaroo) he believed that kangaroos could warn him against foes. Among the Kūrnai and Woi-worung the totem names have almost become extinct, but

This account, I think, raises a strong presumption that this man was subject to some form of brain disease. I have no doubt whatever, that although there was very great deceit practised, the *Bira-arks* were much self-deceived, just as many of the spiritists and their mediums of the present day really believe in the truth of their manifestations.

It seems, however, as I have already noted elsewhere, that the manner in which a man became a *Bira-ark* was generally believed to be that being found alone in the forest by the *Mrarts*, they took him up with them and taught him.

It is worthy of notice that in the tribes I am considering the wizards were believed to go up aloft by very similar means. Among the Kurnai the statement is always made that the wizard went up in company with the ghosts on something called a *marangrang*, and that he went through a hole in the sky, which was opened by a *Mrart* like a *guera-eil* Kurnai, that is, like a headman.¹ This idea of a hole or door in the sky also appears in William Beiruk's account of the dream. I have not found any of the Kurnai who could give any clear account of what this *marangrang* was supposed to be like; the most common definition has been that it was "something like a rope," and that the *Bira-ark* and his attendant *Mrarts* went up on it, or holding on to it. Another statement was that it was like steps, for, said my informant, "it does not touch the ground; you can always hear the *Mrarts* jump down off it." My informant, Tūlaba,² spoke of the *marangrang* as a road (*wau-ūng*), along which the *Yambo* of the dead took its course to the sky.

The tales told of the *Bira-arks* in connection with the *marangrang* are very numerous; one may suffice here as an example. It was related of one *Būnjil Narran* (moon) that when flying across Lake Wellington, in company with the *Mrarts*, on a *marangrang*, he fell off, and would certainly have been drowned had not one of them fished him up with the hook of his throwing-stick and replaced him.

The *marangrang* may, I think, be assumed to have been, in the general opinion, not a rope extending down from the sky to the earth, such as appears to have been the idea of the celestial communication among the Woi-worūng, nor something like steps or a road, according to some of the Kurnai, but something movable. Quite recently a possible explanation has come from an unexpected quarter. I find that the *Turndun* is, among the Ngarego and Wolgal, not only called *Mūdthi* or *Mūdji*, but also

in the birds and animals which they believed could give them warning of danger I think we may suspect the totems which once existed.

¹ *Guera-eil* = great, eminent.

² See "Kamilaroi and Kurnai," p. 191, *et infra*.

Marengrang.¹ Thus, although this word seems among the Kurnai to have lost what may have been its original meaning, as the sacred humming instrument, invented first by the Great Head Spirit, it has retained its place among the magical apparatus of the wizard, and as the means by which they, as also the dead, reach ghost-land.

Among the Omeo Theddora, the wizard was supposed to ascend to the sky by means of something "like a spider's web, which he blew out of his mouth."²

Among the coast Murring, the *gommera*, in his character of a wizard, was also supposed to mount up by a thread. The present headman of the Bega Murring, who is recognised as their *gommera*, explained to me when inquiring about this that "the old men now dead used to climb up to the sky at night by a thread" about the thickness of a grasshaultm, which he picked up from the ground as an illustration.

Among the Kulin of the Wimmera River, and the Jūpagalk of the Avoca River, the wizards, according to my informant, used to "go up" at night for the purpose of bringing back information; but I have not yet learned how it was supposed that they ascended.

Generally speaking, the wizards were supposed to be able to ascend and descend in distant places, for the purpose of bringing away the apparatus by which some one of the distant tribe was bewitching one of the wizard's tribe to death (Woi-worung, Jūpagalk); or for the purpose of laying spells upon persons in a neighbouring tribe (Wolgal, Ngarego); or for the purpose of spying out the movement of an enemy, and thus being able to surprise them with an armed force (Theddora). Such a belief seems, indeed, a necessary and natural corollary to the belief that the wizard could ascend to the sky.³

¹ This is an instance how words unexpectedly crop up in unlikely places. The word *mang*, which with the blacks of North-Eastern Victoria meant a magical substance, e.g., rock crystal, reappears in a Carpentaria tribe as *wangera* (wizard). Kurnai, which in Gippsland is "man" as restricted to the Gippsland tribe, appears with a similar restricted meaning in the great group of allied tribes located on the deltas of the Barcoo and Diamantina Rivers. Many other instances might be quoted, but no one probably doubts the unity of the Australian languages.

² As told to Mr. J. Buntine, J.P., of Toongabbie, by Theddora Johnny, one of the Omeo tribe, who was employed as a stockman. This statement was made as to a headman, Metoko, whose name is now remembered by surviving Maneroo and Gippsland blackfellows as that of a powerful wizard. Mr. Buntine lived at Omeo, shortly after the country was first settled.

³ Mr. A. L. P. Cameron, of Mulurulu, New South Wales, tells me of the Ta-ta-thi tribe of Moulamein, that "they believe the sky to be a solid vault, up to which a wizard once ascended, and was let in through a window by a *geomatek* (ghost). Some of the doctors, but not all, obtained the power of ascending by chewing a piece of skin which had been cut off the abdomen of a dead woman, whose ghost then carried him up."

It is impossible not to be struck with the resemblance in all their beliefs to accounts which have been handed down by the records of ancient people, and to beliefs still existing in the folklore of Europe. The solid vault of heaven finds innumerable parallels everywhere as to its openings into the spirit world beyond. The ascent of mere mortals, or of persons of some class claiming supernatural powers and attributes, is also paralleled in all times and places.

Such beliefs have been common to both Aryan and Semitic peoples. The Australian beliefs which I have now recorded lead to the suspicion that all similar beliefs may have had an origin such as theirs, and that in the legends of peoples we may recognise the natural development of such primitive ideas.

The significance of these Australian beliefs seems to me to be heightened when we reflect that in them we may have conceptions formed by primitive savage man, striving to explain to himself natural phenomena of which he became aware within and without himself, and that these beliefs have then been handed down to us by tribes which for ages have been cut off from contact with more rapidly advancing races; or it may be that we have here the independent origin of ideas which seem to me to be capable, under favourable circumstances, of developing into as complete religious systems as the world has ever seen. In either case the bearing of the evidence cannot, I think, be overrated.

SPECIAL EXTRA MEETING.

JUNE 19TH, 1883.

[*Held by invitation of Mr. C. Ribeiro, at the Piccadilly Hall, S.W.*]

HYDE CLARKE, Esq., *Vice-President, in the Chair.*

The Members had an opportunity of examining the large collection of objects of ethnological interest obtained by Mr. Ribeiro in Brazil.

Mr. RIBEIRO exhibited the five Botocundo Indians (two males and three females) which he had brought to this country.

Mr. HYDE CLARKE addressed Mr. Ribeiro in Portuguese, and conveyed to him the thanks of the Institute for the permission to examine a collection truly anthropological in its character. This

was not their first association with the anthropologists of Brazil, for on the occasion of the visit to this country of the Emperor Dom Pedro II, the Institute offered him their Honorary Membership in testimony of his services, as a man of science, to science generally, and to anthropology in particular.

Mr. RIBEIRO replied, and presented to the Institute a small collection of Botocudo weapons, &c., comprising two bows, three long arrows, two bags, and a monkey-pot used for holding water.

These objects were subsequently transferred, by the Council of the Anthropological Institute, to the Ethnological Department of the British Museum.

A paper, descriptive of the Botocudos, was read by Mr. A. H. KEANE, who had prepared it at the invitation of the Council:—

On the BOTOCUDOS.

By A. H. KEANE, Esq., B.A.

Name—Habitat.—Although the term *Botocudo* cannot be traced much further back than the writings of Prince Maximilian von Neuwied,¹ the remarkable people to whom it is now exclusively applied have been known to Europeans from the earliest period of Brazilian discovery. When the Portuguese adventurer, Vasco Fernando Coutinho, reached the east coast in 1535, we learn from the old writers that he erected a fort at the head of Espirito-Santo Bay² to defend himself against the attacks of the Tupiniquins, Puris, Aimores, and other local tribes. Of these the Aimores,³ or Aimboreas, whose name still survives in the Aimores Coast Range, which stretches from the province of Bahia through Espirito-Santo to Rio de Janeiro, have been clearly identified with the present Botocudos.⁴ Their original home comprised most of the present province of Espirito-Santo, and reached inland to the headwaters of the Rio Grande (Belmonte) and Rio Doce, on the eastern slopes of the Serra do Espinhaço; but they are now confined mainly between the Rio Pardo and Rio Doce (15°–20° S. lat.), and seldom roam westwards beyond the Serra dos Aimores into Minas Geraes. Here they came again into serious collision with the white settlers about the close of the last century, when the rich diamond fields of Minas Geraes began to attract the coast populations towards the interior of Brazil.

It was about this time that the Aimores, whose original name had been forgotten, became generally known as Botocudos, a word about the origin and meaning of which the most fanciful

theories have been proposed.⁵ But the most probable derivation seems to be from the Portuguese *botoque*, a barrel plug, and they appear to have been so named from the form of the remarkable wooden plug or disc at that time universally worn as a lip-ornament by all the tribe. In any case Botocudo is a foreign designation, unknown to the natives, who have no collective tribal name, but some of whose clans call themselves Nac-nanuk, or Nac-poruk, that is, "Sons of the Soil" or Autochthones, with which may be compared the Malay Orang-Benua, applied in exactly the same sense to the aboriginal Malay tribes of Malacca and Sumatra. Others were some years ago known amongst themselves as Engerekmung, a word which our guests of this evening still recognise, not as a tribal, but only as a family or personal name. A perfectly parallel case to this is Aw-ben-a-ki ("Eastlander"), formerly the collective name of a powerful branch of the Algonquin family in Lower Canada, and still used as a personal surname by some of the Minsis, an Algonquin tribe originally from Pennsylvania, a few members of whom are now settled near Ottawa.⁶ This restricted sense of such names arises, no doubt, from the breaking up of tribes, and their absorption in other communities, when the national designation is often retained by a few individuals, and thus gradually becomes a family or personal name. By a somewhat analogous process *L'Anglais*, *Englander*, that is, "Englishman," have become surnames in France and Germany.⁷

The Tembeitera, or Lip-Ornament.—With regard to the *tembeitera*, as the lip-ornament is called by the Brazilians, it should be mentioned that it is by no means peculiar to the Botocudos,⁸ although by them developed to a monstrous size. The disc worn by one of the women of Mr. Ribeiro's company is $2\frac{1}{4}$ inches in diameter, as measured by Professor Flower, and cases are mentioned of 3 inches and upwards. Ear-plugs of great size are also worn, distending the lobe down to the shoulders like great leathern bats' wings. This, combined with their great ferocity and reputed cannibalistic tastes, has always caused the Botocudos to be held in fear and horror, not only by the whites, but also by the Puris, Macharacas, Malalis, Macunis and other surrounding tribes. Prince Maximilian von Neuwied tells us that he was thrilled with horror at his first introduction to a Botocudo chief, whose underlip and ear-lobe were bored through, the lip widely distended horizontally, the lobe hanging down to the shoulders like huge flappers, the body grimy with dirt. Similar ear-ornaments are or have been very common in South and even in Central America, at least as far north as Honduras. When Columbus discovered this last region, during his fourth voyage (1502), he named a part of the seaboard "*Costa de la Oreja*," from the conspicuously

distended ears of the natives.⁹ The early Spanish explorers also gave the name of "Orejones," or "Big-eared," to several Amazonian tribes; and others high up the Tocantins and Araguaya rivers are described as having enormously elongated ears hanging down on their shoulders, an effect attributed by Mr. Alfred R. Wallace¹⁰ to weights suspended from the lobe in youth.

We find a like fashion prevailing from remote times amongst the Indo-Chinese and Malayan peoples of South-East Asia and the Eastern Archipelago, many of whom are noted for the extravagant enlargement of the ear-lobe. The custom is mentioned by Marco Polo, and on this subject Colonel Henry Yule writes that "the Mishinis and Abors of the Assam borders have perforations of the ear-lobe 1 inch in diameter. The Burmese often stick their large cigars in the orifice. Crawford speaks of the enormously-distended apertures in the ear-lobes of the women of Bali. The wild Dayaks of Borneo distend the ear-lobe by heavy earrings till it reaches the shoulder, or even falls below it."¹¹

But while in the Old World the excessive enlargement of the lobe seems to be confined mainly to the remote south-east, the lip-ornament, in various forms and sizes, and attached either to the upper or lower lip, or even to both, forms on the contrary a distinctive feature of many African tribes, especially in the Lake Nyassa region, along the White Nile, and in the Chad Basin. "Little Girls," writes the Rev. Duff Macdonald, "have a small hole (*lupelele*) bored in the upper lip. In this they place a stalk of grass, which prevents the hole from filling up. Next they insert a thicker stalk of grass; then by means of bits of twigs, &c., the hole is made larger and larger till it can receive this ring. Hardly any female is without it. They say it makes them look pretty. The bigger the ring the more they value themselves."¹² This description refers to the Ma-Tumbokas and other tribes between Lake Nyassa and the Lower Zambesi, who wear the *pelele* generally in the upper lip. But Schweinfurth tells us that the Bongos, and others on the White Nile, adorn or disfigure both lips with rings, plugs, plates, and tusks. "Not satisfied with piercing the lower lip, they drag out the upper as well, for sake of symmetry. . . . The projections of the ironclad lips are of service to give effect to an outbreak of anger; for by means of them the women snap like an owl or a stork."¹³ And again: "As soon as a woman is married, the operation begins of extending her lower lip. This, at first only slightly bored, is widened by inserting plugs of wood, gradually increasing in size until the entire feature is enlarged to five or six times its original proportions. The plugs are cylindrical, not less than an inch thick, and

exactly like the bone or wooden pegs worn by the Mosgu women. In this way the lower lip is extended horizontally until it projects far beyond the upper, which is also bored and fitted with a copper plate or nail, or a little ring, or a bit of straw about as thick as a lucifer match. Nose and ear are also pierced for similar ornaments."¹⁴ So also in the Chad Basin, where Nachtigal speaks of a grotesque adornment of two round metal or bone plates distorting upper and lower lips, giving them a snout-like appearance, and causing them to clatter together while speaking.¹⁵

The Botocudo lip-ornament, it should be mentioned, is made of the light, carefully dried wood of the barriguda tree (*Chorisia ventricosa*), which by the natives is called *emburé*, whence Augustin Saint-Hilaire suggests the probable derivation of the name *Aimboré*.¹⁶ It is worn only in the under-lip, now chiefly by the women, but was formerly in more general use amongst the men, as appears from Prince Maximilian's statements and illustrations. The operation of preparing the lip for its reception often begins about the eighth year, when the boring is effected by a hard pointed stick and continually extended by the introduction of larger and larger plugs or discs, for both forms appear to be in use.¹⁷ Notwithstanding its lightness the *tembeitera* gradually weighs down the lip, which at first stands out horizontally and even at a slight upward angle, and at last becomes a mere ring of skin formed round the disc. It is removable at pleasure, as I am able to certify through the complaisance of the woman of this company so adorned, and then the lip hangs limp, exposing the teeth, which, by the continual pressure and friction, often became displaced or deformed. With age both lip and ear get torn or worn away in some parts to a mere film, and are then bound together with bast. Yet the people are very proud of these ornaments, and resent the epithet *epsosseck*, or "long ears," applied to them by their Maloli neighbours. But the practice seems to be dying out even among the Bravos, or wild tribes; and it is significant that of Mr. Ribeiro's party one only wears the fully-developed *tembeitera*, and the *betó-apóc*, or ear-plug.

That such a remarkable custom should be found prevailing amongst primitive tribes, both in the Old and New World, is not a little surprising. It is a striking illustration of the extreme danger, often dwelt on by me in this Society, of building up any theories of racial affinity on the mere resemblance of tribal usages, however strange or extravagant they may seem to be. Certainly no one will venture to say that there has been any direct relationship or social contact between the East African and Brazilian peoples at any time during their past existence. It follows that such fashions must have been developed indepen-

dently of each other in these widely separated regions. But on the other hand, they may not unfairly be appealed to in a higher sense by monogenists as an argument in favour of the common origin of all mankind. Such parallel growths, springing up spontaneously in different centres, are at all events more easily accounted for on the assumption of a primordial unity of the human species, than on that of original diversity or plurality of descent, as maintained by the polygenist school of anthropologists.

Type; Affinities.—All the Brazilian and Amazonian tribes have by some ethnologists been divided into two great groups, the TAPUYAS, or true aborigines, now driven into the highlands and more inaccessible parts by the intruding TUPI-GUARANI, of the plains and lowlands.¹⁸ The former are distinguished by great diversity, the latter by absolute unity, of speech. Consequently, by this convenient arrangement all non-Guarani-speaking tribes may be at once classed as Tapuyas, and *vice versa*. The term "Tapuya" would thus correspond to the equally convenient, but also equally useless, term "Turanian" of the Eastern Hemisphere. At any rate the Botocudos are not in this sense Tapuyas, as should be expected, but clearly of the Guarani stock physically, although of non-Guarani speech. In outward appearance they differ so slightly from the ordinary Guarani type that d'Orbigny, one of the best authorities on South American ethnology, unhesitatingly affiliates them to that stock. The few broad traits with which this master-hand portrays the "Brazileo-Guarani" race—"Couleur jaunâtre, taille moyenne, front non fuyant, yeux souvent obliques, toujours relevés à l'angle extérieur"—might also serve fairly well as a general description of the Botocudos, as may be judged even from the specimens now in London. These specimens also betray the great variety of expression noted even by Prince Maximilian, who tells us that "the features of the Botocudos are as varied and diversified as among Europeans."¹⁹ One of the women, in fact, was so animated, and of such a light complexion, that I felt strongly inclined to regard her as a half-caste until assured by Mr. Ribeiro that she was really a full-blood native, though brought up in a missionary's home, which may partly account for her "brio" and lively temperament.

Apart from this variety of expression the Botocudos may be described in a general way as rather below the medium size, say about 5 feet 5 inches, broad shouldered, with large muscular frames, broad deep torso, remarkably wide thorax, but flat in front instead of convex; arms and legs soft, fleshy, and even effeminate, and terminating with small and delicately formed hands and feet. The features are rather broad and flat, with

prominent brow, high cheek-bone (large zygomatic arches), small nose,²⁰ deeply sunk at frontal suture, wide nostrils, dolichocephalic head, with very slight prognathism; hair of the universal American and Mongol type, black, coarse, lank, round in section, and worn cut round about 2 inches from the crown, somewhat after the manner of the Coroados Indians. As some diversity of opinion seems to prevail regarding the complexion, I have brought together the subjoined statements from various authorities on the subject:—

Milliet: Whiter than most other Brazilian Indians.²¹

Von Martius: Not merely light or dark ruddy-brown, but almost quite white, and cheeks even pink.²²

D'Orbigny: Yellower than Guarani.²³

Vasconcellos: Nearly as light as the Portuguese.²⁴

Dana: Whitish yellow.²⁵

Prince Maximilian von Neuwied: Light, some even white, with red cheeks.²⁶

Vivien de Saint-Martin: Yellowish.²⁷

Comparing these statements with Mr. Ribeiro's living specimens we may conclude that the complexion may, on the whole, be described as of a light yellowish-brown. I have heard it in this room spoken of as a drab, a fawn, a buff, a chamois, a light leathery-brown, and so on. But I consider that the yellowish tinge of d'Orbigny is unmistakable, and it is this very yellow complexion which, combined with the above-described features, imparts both to the Guarani-Tupi and to the Botocudo that decidedly Mongolic look which has been noted by most observers. Augustin Saint-Hilaire, who lived some time among them, was much impressed by their general resemblance to the Chinese, and he tells us that the Botocudos themselves detected the "family likeness." They were greatly surprised at the sight of the Chinese coolies, whom they met in the Brazilian seaports, and whom they at once recognised as of their kindred, calling them their "uncles."²⁸

On this interesting point of the general outward resemblance of the American to the Mongolic races, let me here recall the language of that great observer and profound naturalist, Alexander von Humboldt: "La race Américaine a des rapports très-sensibles avec celle des peuples Mongoles, qui renferme les descendants des Hiong-nu, connus jadis sous le nom de Huns, les Kalkas, les Kalmucks, et les Bouratts [Buriats]. Des observations récentes ont même prouvé que non seulement les habitants à Unalaska, mais aussi plusieurs peuplades de l'Amérique méridionale, indiquent par des caractères ostéologiques de la tête un passage de la race Américaine à la race Mongole."²⁹

Culture, Weapons, Nose-Flute.—Some few of the Botocudos

have become *mansos*, that is, civilised, and are now settled in separate communities, with *aldeamentos*, or villages, as headquarters, about Linhares and some other parts of Espírito-Santo. But the great bulk of the nation is still in the savage state, forming the most numerous and one of the fiercest wild tribes in East Brazil, where they are said to number from 12,000 to 14,000 souls. During the earlier frontier wars, from about 1790 to 1820, every effort was made, not merely to reduce, but to extirpate them, root and branch. Being regarded as irreclaimable savages, addicted to cannibalism and other pagan practices, and altogether no better than wild beasts, methods of warfare were adopted against them which are not usually sanctioned by civilised communities. The small-pox virus was industriously spread amongst them, and poisoned food scattered over the forests frequented by their hunters. By these and other means the Conde de Linhares cleared the coast districts about the Rios Doce and Belmonte, and another Commendador boasted to Professor Hartt that he had either slain with his own hands, or ordered to be butchered with knife, gun, and "poison," many hundreds of this "vermin."³⁰

All the *bravos*, that is, the independent wild tribes, are still in the stone age, or rather, have scarcely yet reached this stage. The highly-finished diorite, granite, and porphyry hatchets, knives, spades, mortars, &c., comprised in Mr. Ribeiro's valuable ethnological collection, belong to the various Amazonian and other more advanced Brazilian tribes mentioned in his catalogue, and nearly all of whom I have been able to identify. Such are the Pamari of the Purus river; the Hypurinas of the Chiwene, a Purus affluent; the Conibos of the Jurua, and thence to the headwaters of the Purus; the Uaupés, very numerous on the Rio Negro; the Araras of Matto Grosso and Para; the Parentintins of the Madeira river. None of the objects in question appear to be used by the Botocudos, all of whose implements, beyond a solitary stone pebble, are of wood or vegetable fibre. They are chiefly wooden mortars, bamboo water-vessels, bags of cotton or bark, reed spears, bows and arrows, which last are their only offensive weapons. The bow is about 6 feet long, and so strong that none but natives can use it. The arrows are of three kinds, barbed, feathered, and often of great length. It is often stated that in East Brazil the only people that use poisoned arrows are the Caimacans (Camacans), a large family in Bahia and Minas Geraes. But I am assured by Mr. Ribeiro that the same practice also prevails among the Botocudos, who display extraordinary skill in the use of these weapons. During the early wars the Portuguese soldiers had to be protected against them by the *gibao d'armas*, a kind of armour made of cotton

cloth, thickened with several layers of cotton wadding. Prince Maximilian, who figures some of these armed warriors, mentions that on one occasion, in order to test the strength of the armour, a Botocudo was allowed to shoot an arrow at a soldier. The dart failed to penetrate to his body, but gave him such a violent shock that the experiment was not renewed.

An instrument of a more peaceful character is a small bamboo flute, which is played on through the nose. This strange habit was probably occasioned by the *tembeitera*, which prevented the lips from being conveniently used for the purpose. Similar nose-flutes are common in India and other parts of the East, where the custom has been explained by the caste system. But however this be, we have here another instance of apparently eccentric customs originating in independent centres.

Sexual Relations.—The Botocudos are described as polygamists. But it would be more correct to say that there are no regular alliances at all, as understood in properly constituted societies. They have certainly advanced beyond the stage of promiscuous intercourse, if that has to be regarded as the primitive condition of Haeckel's *Homo primigenius*. But their unions, formed mainly for convenience and the preservation of the tribe, are all of a purely temporary nature, contracted without formalities of any sort, dissolved on the slightest pretext, or without any pretext, merely through love of change or caprice. Nevertheless, while they last they often give rise to outbreaks of extreme jealousy and passion on the part of the men. The women have not yet acquired the right to be jealous, a sentiment implying a certain degree of equality between the sexes. In case of real or suspected infidelity to their ephemeral masters, they are constantly subjected to the most barbarous treatment, beaten with clubs or hacked about with bamboo knives. One of the women in Mr. Ribeiro's party was frequently subject to usage of this sort, as is sufficiently attested by the numerous scars and gashes still visible on her arms, legs, and whole body.

All the hard work of the household also falls to the share of the women, who are described as submissive—we should probably say apathetic—and kind to their children, whom the men often "kidnapped," and sold for a little rum or tobacco to the whites before the abolition of slavery in Brazil. Families are said to be comparatively large, four or five children being common enough. This statement, however, it may be presumed, refers only to the Mansos, amongst whom alone the family, in the strict sense of the word, can be said to exist. Infanticide also, so prevalent amongst the Amazonian tribes, is said to be extremely rare, which may help to explain the survival of the race in spite of the systematic efforts made to extirpate them

during the first decades of the present century. Now, however, they appear to be yielding to the more insidious influences of alcoholic drinks, epidemics, and the other usual results of contact with a "superior culture."

Dwellings, Food, Industries, Tribal Organisation.—Their dwellings are of the simplest description—mere hovels, loosely put together of branches stuck in the ground, bound together with bast, and seldom exceeding 4 feet in height, yet often accommodating two or more families. They lead a purely nomadic life, roaming naked in the woods in quest of food, which includes all edible roots, batatas, berries, honey, frogs, lizards, snakes, grubs, and larger game, cooked sometimes in huge bamboo canes, which, with a little care, can be made to hold boiling water. They had formerly no hammocks, sleeping without any covering, either on the ground strewn with bast, or in the ashes of the fire kindled to cook the last meal. Their industries were limited to basket-work and the preparation of their weapons and bowstrings, which were made of the bast of the *Ambaiba Cecropia*, as among the Goyatacas (Von Martius). Small canoes also are made, either of bark or of the barriguda tree, by scooping out the trunk with fire.

There is, of course, no common bond of union between the different clans, which are grouped in separate communities of from ten to twenty families, occupying no fixed territory except certain hunting-grounds, which are tacitly recognised by the neighbouring tribes. Any encroachment on these lands leads to tribal disputes and quarrels, which are usually settled by a sort of duel between the champions of the respective factions, but which also end occasionally in a free fight all round. A successful champion often becomes the chief or headman of the community, but he enjoys little personal authority, nor is the office hereditary, so that it is difficult to conceive a lower state of social organisation.

Cannibalism.—The charge of cannibalism frequently brought against these tribes by former writers, and still imputed to them by their neighbours, seems to be amply justified by abundant evidence. D'Orbigny tells us that they wore collars or strings of the teeth of the persons they had eaten, and the portrait of a woman so ornamented is figured in Sir W. Ouseley's "Travels." Von Martius also states positively that all were formerly anthropophagists, devouring not only the enemy slain in battle, but also members of the Puri, Malali, Coroado, and other kindred tribes. The heads were not eaten, but stuck as trophies on stakes, and used as butts for the practice of archery.

Burials, Religious Notions.—Regarding their methods of interment accounts differ, whence it seems probable that the practice

varies in the different tribes. Some are represented as burying their dead in a horizontal position, a few feet below the surface (Prince Maximilian²¹); others in an upright or seated attitude, with crossed arms, in swampy places, or in the hut, which, as amongst the Ainos, is then abandoned (Aug. Saint-Hilaire). Their weapons, or other objects belonging to them when alive, are not deposited with them, but fires are kept up for some time at the graves, apparently to scare away evil spirits. From this it might seem that, contrary to the generally received opinion, the Botocudos possess some notions of the supernatural. But perhaps it would be more correct to say that, at this low state of their evolution, these savages have not yet realised the distinction between the natural and supernatural. By attributing to them more elevated ideas we are merely judging them by our own standard, which is itself often sufficiently crude. All savages, however degraded, if they are capable of reflecting at all, are compelled to think and reason about the dreams and visions of their sleeping hours, and about the natural phenomena surrounding their daily existence. These they naturally attribute either to the shades of the dead, whence ancestry worship, one of the oldest forms of religion, or else to invisible beings, superior perhaps, but still resembling themselves—some friendly, others hostile, but all entering into the normal conditions of things. Thus in its ultimate analysis this pretended belief in the supernatural is reduced to a pure system of anthropomorphism, in which the order of the universe is kept together or disturbed, as the case may be, by *human*, or *quasi-human*, agencies. The *superhuman* is altogether a later differentiation, quite beyond the mental capacity of the true savage.

Nevertheless the Visconte d'Itabayana does not hesitate to credit the Botocudos with a philosophy, or theory of the universe, based on the two time-honoured principles of good and evil. For them the sun (*toru-shom-pek*=day-fire) is supposed to be the good, the moon (*toru-guenket*=night-fire) the evil principle. Hence the latter alone is to be feared and worshipped or honoured; for, here as elsewhere, *timor fecit deos—aut demones*. In this there may be some truth, for we find that amongst most savage tribes the good spirits, being harmless, or already well disposed, do not need to be invoked, whereas the evil spirit must be conjured and propitiated by all manner of rites and sacrifices. Thus has demonology everywhere preceded theology.

In any case there seems to be little doubt that the Botocudos attribute all baneful manifestations to the moon, which causes the thunderstorm, and which is supposed at times itself to fall on the earth, crushing the hill-tops, flooding the plains, and destroying multitudes of people. During storms and eclipses arrows

are shot upwards to scare away the demons of the air, or perhaps the devouring dragon, a practice which Dr. Harmand tells us prevails also among the Khas (wild tribes) of Indo-China, and which still lingers even amongst many peoples of higher culture. Beyond this they have of course no conception of a Supreme Being, or creative force, the terms *yanchong*, *tapan*, &c., said to mean "God," standing merely for spirit, demon, thunder, or at most the thunder-god. But it is difficult to arrive at the truth on these points, as they are topics on which, through superstitious motives or euphuistic notions, they are extremely reluctant to speak.

Language.—The state of their intellect may be gauged by the fact that their arithmetic does not get beyond the number *one* (*mocenam*). *Two* is expressed by *uruhu* or *rihu*, which, however, simply means "much," "many," and which, reduced to the syllable *u*, is used as an adjectival reduplicate postfix to convey the idea of great size. Thus : *wat* = river ; but *wat-u-u-u* = great-great-great-river = sea. The language is full of such expedients, and the women especially are constantly introducing fresh reduplicate forms into their songs, wailings, and oratorical efforts.³² There are also numerous onomatopœic words, as in the case of all undeveloped speech ; and the language is otherwise characterised by extreme simplicity of structure, harsh consonantal combinations, slurred vowel and nasal sounds—these last being attributed to the lip-ornament, which drives the dentals up to the palate, whence they escape through the nostrils. New words of all kinds are also easily introduced, and the French engineer, Victor Renault, who lived a long time amongst them, tells us how on one occasion a word happening to be mispronounced at first caused great laughter. Then it began to be repeated as a capital joke, till at last its origin was forgotten, it ceased to be a joke, and settled down as the accepted form of the word. Thus has it ever been with human speech, still the slave of custom, *usus*—

"Quem penes arbitrium est et jus et norma loquendi."

These are important points, as showing how very evanescent all languages must needs have been in the early stages of their development. Hence we are the less surprised when we are told that the Botocudo tongue is radically distinct from those of all the surrounding tribes. Assuming its possible original identity either with the Tupi-Guarani, the Camacan, Puri, Macharaca, or any other Brazilian language, a few generations of complete isolation would probably be quite sufficient to efface all traces of resemblance with the parent stock, and make it appear as a fundamentally distinct form of speech. So changed and modified have most of the native idioms become in Brazil, that the Portu-

guese say of them generally : *Não tem língua ; fallão só em gerin-gonza*—that is, "They have no language, but only talk gibberish." Amongst the Botocudos themselves a great diversity of speech prevails, a circumstance which helps to explain the serious discrepancies sometimes observed in the few short vocabularies published at different times by Balbi, Von Martius, and Jomard. Thus :—

	Balbi (1826).	Jomard (1846).
Sun	.. <i>taro-di-po</i>	.. <i>toru-shom-pek</i>
Moon	.. <i>taru</i>	.. <i>toru-guenket</i>
Earth	.. <i>m'poron</i>	.. <i>nak</i>
Water	.. <i>manhan</i>	.. <i>mignam</i>
Fire	.. <i>jompak</i>	.. <i>shom-pek</i>
Mother	.. <i>ciopu</i>	.. <i>jiopon</i>
Eye	.. <i>cetom</i>	.. <i>keton</i>
Nose	.. <i>cigin</i>	.. <i>kijin</i>
Tongue	.. <i>eghigitioch</i>	.. <i>kishok</i>
Tooth	.. <i>ghium</i>	.. <i>kijum, &c.</i>

It should be stated that Jomard's list was obtained from the two young Botocudos brought to Paris by Marcus Porte in 1846. It was printed at the end of his "*Notes sur les Botocudos, accompagnées d'un Vocabulaire de la Langue*," which was published in the "*Bulletin de la Société de Géographie*" for December of the same year. In it are given several curious compound terms, illustrating both the structure of the language, and the idiosyncrasy of the people. Thus :—

Horse	= <i>kraine-joune</i> , i.e., "head-teeth."
Ox	= <i>po-kekri</i> , i.e., "cloven-foot."
Ass	= <i>ngo-youne-grak-orone</i> , i.e., "long-eared beast."
Forefinger	= <i>nipo-jik</i> , i.e., "arrow-finger."
Big-toe	= <i>po-jiopon</i> , i.e., "foot-mother," ²² &c.

Craniometry.—In Mr. Ribeiro's collection there are half-a-dozen Botocudo skulls, in a good state of preservation, but which have not yet been carefully examined. Craniological studies of this race have, however, already been made at different times by Virchow, Moschen, Weymann, and Lacerda, and quite recently Senhor J. Rodrigues Peixoto, of Rio Janeiro,²⁴ has published a detailed account of ten Botocudo crania (six male and four female) from Espirito-Santo and Minas Geraes, and in one instance from Santa-Catharina, where some of the tribe are also said to exist.²⁵ Apart from a few abnormal traits, due probably to crossings, Peixoto's description corresponds on the whole fairly well with the recognised fundamental characters of the Botocudo cranial type. These appear to be prominent glabella and super-ciliary arches; keel or roof-shaped vault; vertical lateral walls;

simple sutures; receding brow; deeply depressed nasal point (root of nose at naso-frontal suture); dolichocephalic; rectangular form of the orbits; prognathism; massive lower jaw, with nearly right inferior maxillary angle. The mean cranial capacity is given at 1,480 and 1,212 cubic centimetres for men and women respectively, the latter falling as low as 1,140, the former rising to 1,625. This enormous difference in the capacity of the two sexes is, however, at variance with the conclusions of other observers. The cranium is distinctly dolichocephalic, with mean index 73.30 for males, and 74 for females, and extremes 71-79, the latter consequently sub-dolichocephalic. But the most remarkable feature is the extreme prognathism of the upper maxillary, indicated by an alveolo-subnasal angle of 61° for men, and $62^{\circ}75$ for women. This feature, which would almost assimilate the Botocudo to the Hottentot type, could not certainly be suspected in the living subject, judging at least from those of Mr. Ribeiro's company, whose prognathism seems to be of a very unpronounced type. In consequence of its dolichocephalic, and even hypsistenocephalic, character (long antero-posterior and vertical diameter combined), Peixoto allies the Botocudo skull to that of the fossil man of Lagoa Santa. On the other hand, the leptorhine form of the nose (nasal index 46.76) induces him to affiliate the race to the leptorhine Sambaquis of the South Brazilian provinces, so that on craniometrical grounds he concludes that the Botocudos are a mixed people resulting from the fusion of the extinct Lagoa Santa and still extant Sambaqui stocks. It may be mentioned that these Sambaquis seem to be identical with, or at all events a branch of, the widespread Parana nation somewhat vaguely known as "Bugres," who are no doubt of Guarani-Tupi stock. Other tribes, known to the whites by the same name, are found as far north as the province of Bahia, and some of them, we are told, wear a lip-ornament like that of the Botocudos,⁸⁰ with whom they are often associated. Hence Peixoto's studies would so far confirm the general conclusion that Botocudos, Bugres, Sambaquis, all constitute one ethnical group, closely allied to the great Tupi-Guarani family.

NOTES.

¹ "Reise nach Brasilien," Frankfort-on-Main, 1820, 3 vols.

² So named by Coutinho because discovered by him on the feast of the "Holy Ghost" (Whit-Sunday), 1535.

³ Not to be confounded with the Aymaras of Bolivia, with whom they have nothing in common.

⁴ Thus Balbi, amongst others: "Les Botocudos, ou Botocoudya, connus jadis sous les noms, d'Aymorés, Aimbore ou Ambourès" ("Atlas Ethnographique," xxvii, 201).

⁵ Milliet derives it from the Portuguese *boto* and *codea*: "Por isso que os Indios d'este nacio erão rolhos e trazião o corpo coberto d'uma codea de gomma

copal, com que se pintavão!" ("Diccionario do Brazil," vol. i, p. 162). Others have associated it with the words *betô* and *betô-apôc*, the respective native names of the national lip and ear ornaments.

⁶ The chief of these Minis, who was in London last year on business connected with the tribe, called himself Aw-ben-a-ki; but he had no knowledge of any kindred tribe now so named.

⁷ It is curious to note that while *England* is a well-known family name in the south of Ireland, whence the famous Dr. England, Bishop of Charleston, *Ireland* is an equally common surname in England. Parallel cases are Ffrench, Francis, Francesco, Scott—this last dating from the time when Scotia—Hibernia, as in the mediæval names John Scotus Erigena, Duns Scotus, &c.

⁸ Thus of the Tapuyas, a large nation widely diffused throughout Maranhão and Ceara, and by some allied to the Aimores, we read that "trazião mettidas em buracos, que fazião nas orelhas e no beijo inferior, rodellas de madeira" (Brito Freire, quoted by Milliet, vol. ii, p. 689).

⁹ H. H. Bancroft, "History of the Pacific States" (San Francisco, 1882), vol. i, p. 211.

¹⁰ "Travels on the Amazons."

¹¹ "Notes on Analogies of Manners between the Indo-Chinese Races and the Races of the Indian Archipelago," in "Journ. Anthropol. Inst.," February, 1880.

¹² "Africana" (Edinburgh, 1882), vol. i, p. 17.

¹³ "Heart of Africa," vol. i, p. 407. He adds that circular plates, nearly as large as a crown piece, made of quartz, ivory, or horn, are inserted into the lips, that have been stretched by the growth of years, and these often rest in a position that is all but horizontal. When the women want to drink, they have to elevate the upper lip with their fingers, and so pour the draught into their mouths. And at page 409, mention is made of the Lubah women (Mittu tribe) who, "not content with the plate or ring, force a cone of polished quartz through the lips as though they had borrowed an idea from the rhinoceros. These are over 2 inches long, and sometimes worn by the men."

¹⁴ *Ibid.*, p. 296.

¹⁵ "Diese haben allmählich eine schnauzenförmige Bildung der Lippen zur Folge und schlagen beim Sprechen klappernd auf einander, was der an wunderlichen Zisch-Hauch-und Kehl-Lauten ohnehin schon reichen Sprache einen noch seltsameren Klang verleiht" ("Sahara und Sudan," Part II, p. 531). The Sourai women of the same region wear a small glass cylinder in the upper lip pierced for the purpose.

¹⁶ "Voyages dans l'intérieur du Brésil" (1816-21), Paris, 1830.

¹⁷ At least in Prince Maximilian's chief illustration, it is distinctly figured as a plug or cylinder. Such an object might well suggest comparison with a "botoque," and thus so far confirm the above-mentioned derivation of the word *Botocudo*.

¹⁸ "D'Après Gonçalves Dias, qui s'est fait simplement l'interprète de l'opinion populaire, les tribus Brésiliennes descendraient de deux races absolument distinctes: la race conquérante des Tupi [Tupi-Guarani], qui habitait surtout le bord de la mer et les vallées des grands fleuves, et la race vaincue, pourchassée, des Tapuyas, qui vivait surtout dans les forêts de l'intérieur" (Vivien de Saint-Martin, vii, p. 517).

¹⁹ "Reise nach Brasil," vol. ii, p. 4, ed. 1820.

²⁰ Due possibly to artificial deformation, for Topinard at least speaks of the "déformation nasale," or flattening of the bones of the nose, practised by the *Botocudos* ("Anthropology," p. 183).

²¹ "São mas brancos que a maior parte dos demais Índios do Brasil" (*op. cit.*, vol. i, p. 162).

²² "Haut nicht sowohl heller oder dunkler röthlichbraun als beinahe völlig weiss und auf den Wangen sogar röthlich gefarbt" ("Ethnographie Amerikas," zomal Brasilien, Leipzig, 1867, vol. i, p. 318).

²³ "L'Homme Américain."

²⁴ *Op.* 1662, quoted by Von Martius.

²⁵ "American Encyclopædia," Art. *Botocudos*.

²⁶ *Op. cit.*, vol. ii, pp. 4 and 66.

²⁷ "Nuance jaunâtre de la peau" (*op. cit.*, p. 517).

²⁸ "M. Aug. Saint-Hilaire raconte que les Botocudos qui rencontrent des Chinois dans les ports du Brésil, frappés de leur ressemblance avec eux, les désignent comme leurs oncles" (Hollard, "L'Homme," p. 197). A parallel case is that of the Bashkir soldiers of Orenburg, who formed part of the Russian army sent to put down the Hungarian revolt of 1848, and who recognised their Ugrian kinsmen in the Zeklars and other Magyars now settled in the Danube basin.

²⁹ "Vues des Cordilléras," vol. x, p. 7.

³⁰ "Geology and Physical Geography of Brazil" (Boston, 1870), pp. 577-606.

³¹ Prince Maximilian, vol. i, p. 333.

³² A similar linguistic faculty has been developed amongst the women of the Zulu Kafir tribes, who often invent new words on the impulse of the moment, these words afterwards becoming adopted as current forms.

³³ Compare the expressions "father-toe," "mother-toe," "baby-toe," &c., of English nurses.

³⁴ "Novos Estudos Craniológicos sobre os Botocudos" (Rio Janeiro, 1882).

³⁵ But here often confounded with the Bugres of that region.

³⁶ "Algumas tribus d'estes Indios furão o beijo inferior como os Botocudos" (Milliet, *op. cit.*, vol. i, p. 175).

The ETHNOLOGY of GERMANY.—PART VI.

THE VARINI, VARANGIANS, AND FRANKS.—SECTION II.

By HENRY H. HOWORTH, Esq., F.S.A.

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THE first undoubted mention of the Franks in history is during the reign of the Emperor Gordian III (238-244). Vopiscus, in his "Life of Aurelian," tells us that being the tribune of the 6th or Gallican Legion at Mayence, Aurelian so punished the Franks, who had been harrying throughout Gaul (quum vagarentur per totam Galliam), that 700 of them were killed and 300 made captive and sold *sub corona*—(i.e., with crowns of flowers about their heads in the usual fashion, Vopiscus, ch. vii). This was about the year 238 A.D. In 241, on the occasion of the victories won over the Persians, this defeat of the Franks was celebrated in a triumphant song, of which Vopiscus has preserved some phrases: "Mille Francos, mille Sarmatas semel et semel occidimus: mille, mille, mille, mille, mille, Persas quarimus." This notice, it will be seen, puts the Franks close to Mayence, and therefore near the outlet of the Maine into the Rhine; and they were therefore probably Ripuarians. A few years later, when Gallienus had mounted the throne, we read how the Franks,

having ravaged Gaul, invaded Spain, and having devastated and nearly destroyed the town of Taragona, a portion of them went even as far as Africa (Victor de Caesaribus, xxxiii; Eutropius, ix, 7). The passage clearly shows the Franks were not unacquainted with navigation, and in fact it has been suggested that their route was along the coasts of Gaul and Spain, and thus through the Straits of Gibraltar to Africa, and not through central Gaul and Spain at all—a view which is not impossible. Zonaras tells us Gallienus fought with the Franks (*op. cit.*, xii, 24). Shortly after we find Postumus, who commanded the barbarians in Gaul, raising the standard of revolt against Gallienus, and employing Celts and Franks in his army (Treb. Poll., in vit. trig. tyrann., 3). Aurelian, having mounted the throne, drove the Germans out of Gaul. In the short reign of Tacitus they once more crossed the Rhine, but were driven out again by Probus. Zosimus tells us (i, 76) how he fought against the Franks in the year 277, and Vopiscus refers to his victories over them in inflated phrases: “*testes Franci inviis paludibus, testes Germani et Alemanni, longe a Rheno submoti littoribus*” (Vopiscus, in Prob., 12). Vopiscus says he re-conquered sixty cities (!) from the Germans, which they had taken; killed 400,000 men (!!), and captured 16,000 prisoners; forced nine of their kings to be suppliants on their knees for his pardon; built forts, and placed garrisons among them, and compelled them to give hostages, or rather to make over troops, whom he distributed as frontier guards. No doubt among the Germans thus conquered by Probus were many Franks. These triumphs he reported in letters he addressed to the Roman Senate, which are preserved by Vopiscus (Dom Bouquet, i, 540, 576).

The Franks afterwards asked the emperor to find them settlements. He accordingly planted a body of them on the Pontus, (? about Varna, which apparently preserves the name of the Varini). A portion of them having collected a great fleet, they devastated the greater part of the coasts of Greece and Asia Minor; then sailed westwards, ravaged the coasts of Sicily, and captured Syracuse; then went over to Africa, and having visited Carthage, returned again (Zosimus, Dom Bouquet, i, 576; Eumenius Paneg., ch. 18; Dom Bouquet, i, 714). This was assuredly an astounding expedition, worthy to rank with the famous campaign of the Norsemen against the Moors in the ninth century. It is surely incredible that any but a maritime nation could have compassed such a feat, which was especially worthy of the Varings.

In the year 280 two usurpers rose in Gaul against Probus—Bonosus and Proculus. The latter claimed to be of Frank origin, and fled to the Franks for refuge; but he was betrayed by them,

"ipsis prodentibus Francis, quibus familiare est ridendo fidem frangere" (Vopiscus, *op. cit.*; Dom Bouquet, i, 541). Here, as has been remarked, we already find a Frank in a position of importance in the Roman service.

We now come to the time of Carausius, of whom we read in Eutropius that he was of the humblest birth, but rose on account of his military talents, and was appointed to the command of the maritime tract of Belgica and Armorica, with his headquarters at Bononia, in order to protect those coasts from the incursions of the Franks and Saxons. He captured many of them, but as he remitted no booty to headquarters, nor yet restored it to those from whom it had been plundered, it began to be suspected that he was in league with the invaders, and shortly after, Maximian having ordered him to be killed, he assumed the purple (Eutropius, *sub ann.* 280; Dom Bouquet, i, 573). Here again we have a piratical maritime nation, assailing the borders of Gaul in company with the Saxons, the very next neighbours of the Varini, in their quarters at home beyond the Elbe.

Mamertinus, in his panegyric on Maximianus Hercules, tells us how the Franks went to him with their king, seeking peace. This was about 288 A.D. (Dom Bouquet, i, 711). Valesius calls this king Atech, attributing to this event another passage of Mamertinus as follows: "Per te regnum recepit Genoboudes: Atech vero munus accepit. Quid enim aliud ille expetivit, in conspectum tuum cum omni sua gente veniendo, nisi ut tum demum integra auctoritate regnaret quum te, Maximiane placasset (*id.*, note e).

Eumenius extols Maximian for having pacified the Læti (*vide infra*) and Franci: "Sicut postea tuo, Maximiane Auguste, suctu Nerviorum et Trevirorum arva jacentia Lætus postliminio restitutus, et receptus in leges Francus excoluit" (*id.*, 714). This is dated by the Benedictines in the year 291.

We next read of the Emperor Constantius, who was appointed Emperor of all Gaul in 292, attacking the Franks who had wandered into and occupied the Batavian island. Eumenius tells us how they had done so under the auspices of a former native of the island ("sub ipso quondam alumno suo"), *i.e.*, no doubt, as every one is agreed, of Carausius. We saw in the former paper how he settled the Saxons along the southern shores of Britain. It would seem, therefore, that on either side of the Channel he was the means by which the Teutonic invaders began to be colonised within the borders of the empire. Eumenius goes on to say that the invaders were defeated by Constantius, who transported them within the borders of the empire and settled them down within its limits: "ipsas in Romanas trans-

tulit nationes ut non solum arma sed etiam peritatem ponere cogere" (Dom Bouquet, i, 715). Ammianus Marcellinus says they were settled in the district of Toxandria (*vide infra*); there they were settled, no doubt, in the same way that the Saxons were in Britain, as military colonists ("milites limitanei et riparii"), the Liti and Læti of subsequent writers.

Constantius had also encountered a body of Franks beyond the Channel. They were mercenaries, who were in garrison in London, and had doubtless been in the service of Carausius and Allectus. Constantius defeated and drove them away, much to the joy of the Londoners. The words of Eumenius are: "Quiquid ex mercenaria illa multitudine barbarorum proelio superfuerat, cum direpta civitate fugam capesse cogitarent, passim tota urbe confecerint; et non solam provincialibus vestris in cæde hostium dederint salutem, sed etiam in spectaculo voluptatem. O victoria multijuga et innumerabilem triumphorum, qua Britanniae restitutæ, qua gentes Francorum penitus excisæ" (Eum. Pan., Constant., xvii; Dom Bouquet, i, 714).

From these notices it will be seen that the Franks were already divided into two well-marked bodies—one of them settled on the Lower Rhine, near the Batavian island, and doubtless largely recruiting the freebooters in the English Channel; the other body on the Upper Rhine, near Mayence.

The victory of Constantius over the Franks on the Batavian island is referred to by Eumenius in two other passages, in which he praises the deeds of Constantine his son. In one he refers to his father's doings thus:—"Multa ille (Constantius) Francorum millia, qui Bataviam aliasque cis Rhenum terras invaserant, interfecit, depulit, cepit, abduxit" (Eum., c, 4; Dom Bouquet, i, 714). Again, in a later chapter he says: "Quid loquar rursus intimas Franciæ nationes non jam ab his locis, quæ olim Romani invaserant sed a propriis ex origine suis sedibus, atque ab ultimis barbariæ litoribus avulsas, ut in desertis Gallia regionibus collocatæ et pacem Romani imperii cultu juvent et arma dilectu?" (Dom Bouquet, i, 715.) This is the first mention known to me of the term *Franciæ*, as a territorial name. The editor of the work, already so often cited, on the *Historians of France*, says that the term would appear at this time, from a poem of Ausonius, composed in the year 379, to have referred to a district east of the Rhine:—

"Jans veni, novus anne veni, renovate veni sol,
Hostibus edomitis, qua Francia juncta Suevis
Cerrat ad obsequium Latiis ut militet armia."

Also, in another poem on the Moselle:—

"Accident vires, qua Francia, quasque Camaves,
Germanique tremant."—(Dom Bouquet, i, 715, note d.)

Constantine the Great laid a heavy hand on the Franks. Eutropius tells us how he killed many of them and of the Alemanni, captured their kings, and cast them to the wild beasts in the circus: "Captisque eorum regibus, quos etiam bestiis cum magnifico spectaculo muneris parasset, objecit" (Eutropius, x, 2). This was in his first year, *i.e.*, 306. Eumenius refers to this in fulsome terms. He tells us the two kings who were exposed in the circus at Trèves were called Ascaric and Merogaisus. (So Zeuss reads the very corrupt sentence in which the names occur. The MSS. read as follows:—"Asacari cinere gaisique, Asacari cumero geasique, Assaccari cymero crasique, Asacari cymero gaisique." Zeuss, 339, note). Of their subjects who were captured, those whom perfidy made unfit for soldiers, and their ferocity for slavery, were made a spectacle of, and wearied the ravening hearts by their multitude. By these means Constantine pacified the valley of the Rhine, and converted it into an Arcadia. Listen to his praises. Speaking of the Franks he says: "Ubi nunc est illa ferocia? Ubi semper insida mobilitas? Jam ne procul quidem Rhenum audetis accollere, et vix securi flumina interiora potatis. Contra hinc per intervalla disposita magis ornant limitem castella, quam protegunt: arat illam terribilem aliquando ripam inermis agricola, et toto nostri greges flumina bieorni mersantur. Hæc est tua, Constantine, de Ascarici Regaisique supplicio quotidiana atque æterna victoria, omnibus quondam secundis præliis anteposenda" (Eumenius, "Paneg. de Const.," xi; Dom Bouquet, 715).

Twenty years later the victories of Constantine inspired the panegyrist Nazarius, who spoke of them in fulsome terms:—"Tu ferocissimis regibus Ascarico et comite suo captis, tanta laude res bellicas auspicatus est, ut jam inauditæ magnitudinis obsidem teneremus" (Dom Bouquet, i, 721).

Constantine also made a bridge over the Rhine, on which he placed a flotilla to overawe the Franks, *i.e.*, no doubt, the Ripuarians (Eumenius, Dom Bouquet, i, 715).

The Franks were not, however, entirely crushed, for in the year 309, on the rebellion of Maximian, when Constantine had to leave the Rhine and march against him, we are told the Franks again broke out; but he speedily returned, and they were as speedily penitent (Eumenius, Dom Bouquet, i, 716).

This secured peace with them for the rest of his reign. After his death they again began to be turbulent; we read how, in 341, his son Constans fought against them with varying success, while the following year he defeated them, and peace was made with them (*æ* "Chron. Hieron. Presby. de Gallia." Idacius, in the "Fasti Consulares," says the same, Dom Bouquet, i, 610).

Libanius, the rhetorician, in lauding the deeds of Constans, says the Franks received overseers; *arkhontes* he calls them (Perry, "Franks," 53, note 2).

In 351, the usurper Magnentius, who was of German descent, and perhaps a Frank, was assisted by the Franks and Saxons, who lived, we are told, beyond the Rhine and the Western Sea; meanwhile the Gallic towns and the fortresses on the Rhine were left defenceless (Julian, *ex* Oration. 1, in Constantium; Dom Bouquet, i, 723). Zosimus tells us Magnentius was sprung from the barbarians, and lived among the Læti, whom he calls a Gallic nation (*op. cit.*, ed. Oxon., 1679, p. 134).

We now reach a time when many of the principal offices in the administration of Gaul began to be filled by the barbarian chiefs. Thus we read how, about the year 355, a Frank named Silvanus, who was in command of the infantry, was sent by the Emperor Constans into Gaul, to repress the disorders there, and to make head against the barbarians who were overrunning it. Silvanus became the victim of a crafty officer named Dynamius, who forged some letters compromising him with the emperor. In vain Malarich, who is called the commander of the Gentiles—that is, of the foreign levies in the imperial service—and who was also a Frank, pleaded for the innocence of his countrymen. Fresh letters, compromising both Silvanus and Malarich, were duly prepared by Dynamius. Malarich called round him the Franks, of whom we are told there were then a very great number in the palace, and in resolute language laid open and proved the falsehoods of the machinations by which their lives were threatened, and was loud in his complaints. Meanwhile a commission of inquiry was appointed to make investigation; but Silvanus, knowing how impressible the emperor was, and fearing that he might be convicted although innocent, began to think of trusting himself to the good faith of the barbarians. From this he was dissuaded by Laniogaisus, who was himself a Frank, and who told him the Franks would readily put him to death or betray him for a bribe. Driven into a corner, he determined to rebel, and having won over the principal officers of the legions, he tore the purple silk from the standards and assumed the title of emperor. When news of this reached Constans, he despatched a force, of which Ammianus says he was one, to suppress the revolt. This had spread very much, but having tampered with some Gallic soldiers in the service of Silvanus, a body of them slew the sentinels and penetrated into the palace: they dragged Silvanus out of a little chapel in which he had taken refuge, and killed him. Silvanus, we are otherwise told, was the son of Bonitus, who was of Frankish extraction. Both names prove that they had virtually adopted

Roman names, and abandoned their Teutonic ones (Ammianus Marcellinus, xv, 5). The murder of Silvanus took place at Agrippina, that is, Cologne; with him were also killed Lutto and Mandio, both of them counts, and both, also, in all probability, Franks (Dom Bouquet, i, 543). These executions were apparently revenged immediately by his countrymen, who captured Cologne. Zosimus tells us that, in conjunction with the Saxons and Alemanni, they devastated forty towns on the Rhine (Dom Bouquet, i, 577).

In the next year, that is, in 356, Julian marched to the Rhine, and having defeated the Alemanni took possession of Cologne; nor, as we are told, did he leave it before the Frank kings began, through fear of him, to abate in their fury, when he made peace with them, and put the city into a very complete state of defence. The words of Ammianus are: "*Igitur Agrippinam ingressus, non ante motus est exinde, quam Francorum regibus furore mitescente perterritis, pacem firmaret reipublicae interim profuturam et urbem reciperet munitissimam*" (Ammianus Marcellinus, xvi, 3).

In the year 357, Julian, after defeating the Alemanni in a terrible struggle, returned to his winter quarters. As Severus, who commanded the cavalry, was on his way to Rheims, through Cologne and Juliers, he fell in with 600 light armed Franks, who were laying waste those places not defended by garrisons, and who had taken advantage of Julian's absence among the Alemanni. Now that he returned they occupied two fortresses, which had been long abandoned, and defended themselves as long as they could. Julian ordered the forts to be blockaded. The Meuse, we are told, flowed beneath them, and the blockade continued for fifty-four days, through nearly all December and January, the enemy keeping up a brave resistance. The river was frozen, and Julian ordered a number of light boats to move up and down it, so as prevent the enemy from crossing it over the ice. This manoeuvre was successful, and the Franks, driven to despair, and exhausted by hunger and watching, sent to offer to surrender. They were accordingly sent on to the emperor, whereupon a great number of Franks, who had gone to assist their compatriots, hearing they were made prisoners, returned home again (*op. cit.*, xvii, 2). Libanius speaks of 1,000 Franks who were sent by Julian to Constans, who distributed gifts among them and enrolled them among his troops, deeming them to be towers among his other soldiers (Dom Bouquet, i, 733). These Franks, against whom Julian fought, were doubtless Ripuarians from the river Maine. We now find him in contact with their brethren on the Lower Rhine. This was in 358. We are told that he marched against the Franks, that is, against

that tribe of them usually called Sali, who, some time before, had ventured with great boldness to fix their habitations on the Roman soil, near Toxandria. But when he had reached Tongres ("cum Tungros venisset") he was met by an embassy from this tribe, who expected still to find him in his winter quarters, offering him peace on condition of his leaving them unattacked and unmolested, as if the ground they had seized were rightfully their own. Julian comprehended the whole affair, and having given the ambassadors an ambiguous reply, and also some presents, sent them back again, leaving them to suppose he would remain in the same place till they returned.

But the moment they had departed he followed them, sending Severus along the bank of the river, and suddenly came upon the whole settlement like a thunderbolt; and availing himself of his victory to make a reasonable exhibition of clemency, as indeed they met him rather with entreaties than with resistance, he received the submission of them and their children (*op. cit.*, Bohns tr., xvii, 8). Julian then attacked the Chamavi, and, as I have remarked, it is interesting to find Ammianus, in this notice, making a clear distinction between the Franks and the Chamavi. In a letter of Julian which is extant, we find him speaking of his having marched against the Salian Franks, and the Chamavi, and that the gods having been propitious he had subdued the Salians and expelled the Chamavi.

In reference to these events, in which the Franks seem to have crossed the Rhine in considerable numbers, Zosimus has a very curious and interesting passage, which has been too little considered. He says, speaking of the year 358 A.D., that the Saxons were deemed the most powerful in bodily and mental vigour of all the barbarians inhabiting those regions, *i.e.*, the neighbourhood of the Rhine. They sent out a portion of their stock, namely, the Kuadi, into the territory occupied by the Romans; but the neighbouring Franks prohibited them crossing for fear the emperor might have just cause for again entering their borders. Having built some ships, they passed by the district subject to the Franks, and reached that subject to the Roman jurisdiction. Their ships at length reached the Batavian island and drove out the Sali, a branch of the Franks who had sought refuge there from their attack. Previous to this the island had been subject to the Romans. When Julian heard of this he attacked the Kuadi. He ordered his people, however not to molest the Sali, since they had not invaded the Roman borders as enemies, but only when compelled by the Kuadi. Julian showed them even greater consideration, for he permitted one section of them, with their king, to cross within the Roman territory. Others sought shelter on the frontier

("ad limites," says the translation before me. Bouquet translates "ad montes," but there are no mountains on the Lower Rhine). They all at their own instance put themselves and their property at his service. Julian now began to take measures for the defence of the frontier. Feeling that the barbarians were not capable of great efforts in war, but only given to predatory attacks, he was fearful that the borders of the empire would suffer accordingly, but was doubtful what policy to adopt to counteract them. Zosimus tells us there was at this time a gigantic barbarian named Khariettus, who had immense vigour. He had left his own people and joined the Romans, and taken up his residence at Trèves, when he noticed that the barbarians were in the habit of attacking the towns beyond the Rhine and plundering them. These attacks began about the same time as Julian's authority. As he could not adopt the plan he would have liked, inasmuch as there was no law permitting him to do so, he adopted another course. Hiding himself in the thick woods, he awaited the attacks of the enemy, and, falling upon them when overcome with sleep, he cut off as many heads as he pleased, with which he returned and showed them to his co-citizens. As this happened frequently it caused considerable dread to the barbarians, who did not know whence the blow came, and who yet saw their numbers daily decreasing. Presently a band of robbers collected round him, which increased in numbers considerably, whereupon Khariettus informed Julian about the whole matter. He, conscious that it was impossible to follow up the forays of the enemy with a regular army, and that the only way of effectually meeting the freebooters was with another set of freebooters, determined to take Khariettus and his band into his service, and having joined a large number of Salians to them, he sent them out at night against the Kuadi. This he supplemented by a series of military posts, which made the escape of the robbers difficult. He did not relax his efforts until the Kuadi were at length so harassed that they submitted with their king to Julian, who by his tactics had secured an immense number of prisoners, including the king's son, who had been captured by Khariettus. Having punished them severely, Julian insisted upon their giving hostages from the noblest among them, including the king's son. Julian gave way about the last, in response to the king's tears. Peace was now made, and we are told that the Salii Kuadi and certain of the inhabitants of Batavia were enlisted in the legions (Dom Bouquet, i, 579-80).

The story is told in a different way, without mention of the Salians or Franks, by Eunapius (*id.*, 567-8). He enables us to correct the Kuadi of Zosimus (who have been apparently confused by the editors with the Kuadi, who were a Sarmatic people)

into Chamavi, for this is the form of the name in Eunapius. This is very interesting, since we see what a sharp contrast there was between the Chamavi, who are called Saxons, by Zosimus, and the Franks whom they actually drove out of their old seats.

In the year 360 Ammianus tells us how Julian, who had meanwhile been saluted as emperor at Paris, crossed the Rhine and entered the district belonging to a Frank tribe called the Attuarii, whom he describes as men of a turbulent character, who were then licentiously plundering the districts of Gaul. He attacked them suddenly and unawares, for they relied greatly on the ruggedness and difficulty of the roads which led into their country, and which no prince within their recollection had ever penetrated. He put many of them to death, and captured many prisoners, and granted the survivors peace (*id.*, xx, 10).

In the year 368 we read that the Franks and Saxons assailed the coasts of the Gauls with terrible energy—burning, ravaging, and making prisoners. To oppose them Valentinian went to Bononia and Rutupiae, and concerted measures there (Ammianus Marcellinus, xxvii). On this passage the editors of Dom Bouquet remark that Hieronymus, who died in 420, in the "Life of Hilarion," says that Francia was situated between the Saxons and the Alemanni (Dom Bouquet, i, 561, note c). In his Chronicle we read, under the year 373: "Saxones caesi Deusone in regione Francorum" (Dom Bouquet, 611). This fact is also mentioned by Eusebius, whose words are: "Saxones caesi Diovione, in regione Francorum considerunt qui superfuerunt" (*id.*, ii, 462, note).

The Franks were now settled in considerable numbers west of the Rhine, and we read of the Romans employing them in repelling the attacks of the other invaders. Thus we find Gratian, in 377, appointing Nannenius to command a force which was to meet an invasion of Germans then impending, and associating with him Mellobaudes, who is called "domesticorum comes" (i.e., count [commander] of the domestic guards) and king of the Franks, and is described as a man of great courage and renown (Ammianus Marcellinus, xxxi, 10). They inflicted a severe defeat on the invaders.

Mellobaudes was no doubt the same person who is mentioned as the tribune of the guard in 353 (Ammianus Marcellinus, xiv, 11), and again as the tribune of the heavy-armed soldiers, and the friend of Silvanus and Malarich (*id.*, xv, 5). From this position as an imperial officer he seems to have easily developed into a king of the Franks.

Under the year 374 we read how Macrianus, the king of the Allemanni, having made peace with the Romans, eventually

died in the country of the Franks, which he had invaded, and which he had ravaged in a most destructive manner, till at last he was cut off by the manœuvres of Mellobaudes, the warlike king of that nation, and slain (*id.*, xxx, 3).

Zosimus tells us, under the year 381, that Julian committed some forces to Baudon and Arbogast, who were Franks and great friends to the Romans, free from avarice and from mercenary motives, very prudent in warlike matters, and very pre-eminent in strength (Dom Bouquet, i, 583). In 388, Arbogast was sent by Theodosius to put down Victor, the son of the usurper Maximus, who had adopted the style of Caesar. He speedily killed him (*id.*).

Our next authority is Sulpitius Alexander, of whom we only know that he is quoted as an authority by Gregory of Tours. He tells us how during the usurpation of Maximus, who revolted against Valentinian II, at the end of the fourth century, and when the fortunes of Maximus were at a low ebb, and he was sheltering at Aquileia, in Italy, whither he had gone against Valentinian, the Franks invaded Gaul.

They were led by three chiefs, named Gennobaud, Marcomir, and Sunnon, and ravaged the country as far as Cologne. When the news reached Trèves, Nannenus and Quintinus, who had been entrusted with the care of his son and of Gaul by Maximus, marched with an army toward Cologne; but the enemy had already re-crossed the Rhine laden with booty. They left a portion of their army behind, which was attacked and dispersed in the Ardennes by the Romans. The latter now deliberated whether they should cross the river into "Francia" (*i.e.*, the district beyond the river). Nannenus prudently refused to do so, but Quintinus and the rest of the army, being of a different opinion, crossed the Rhine near Neutz, and two days later arrived in a district that was well peopled, and where the towns had been abandoned. The Franks, professing to be frightened, had withdrawn into their forests, and raised abattis of trunks to close the ways. The Romans, having burnt their houses, gave themselves up to security. When they again advanced into the forest after their enemies, they were assailed by showers of poisoned arrows, the cavalry were bogged in the morasses, and only a few of them escaped; among the slain was Heraclius, the tribune of the Jovinians (Gregory of Tours, ii, 9). This was apparently in 388. Presently Nannenus was replaced by Kharietton and Syrus, who opposed the Franks in Germania (*i.e.*, probably in Alsace).

The Franks seem to have carried off some plunder on this occasion, and we read how Arbogast, who belonged to their race, incited the Romans to compel them to return the booty

they had carried off, and to punish those who had violated their troth. The Romans seem to have marched against them: their general had an interview with Marcomir, and the other royal officials of the Franks, from whom he took hostages, and then returned to Trèves. Valentinian II was then reigning, but he was virtually a prisoner in his palace, the military affairs of the empire being controlled by the Franks in his service, while the civil affairs were directed by the faction of Arbogast, another Frank, and none of the soldiers could be depended upon to obey the emperor. Arbogast had had a long feud with Sunnon and Marcomir, the Frank chiefs, against whom he now marched. He arrived at Cologne in midwinter, fancying he could easily penetrate into the Frank country at that season, while the forests were free from leaves, and ambuscades were difficult. As I have argued, the Franks had at this time become the masters of the various tribes who lived on the right bank of the Lower Rhine, and we are told that Arbogast crossed the Rhine at the head of his army, and ravaged the land of the Bructeri, who lived nearest to its bank, as well as the village inhabited by the Chamavi, and was only opposed by a small number of Ampsuarii and of Chatti, commanded by Marcomir, who showed themselves on the neighbouring heights. Eventually Valentinian was killed by Arbogast, who set up Eugenius in his place. This was in 392. We are told that he renewed the treaties with the Alemanni and the Franks (Gregory of Tours, ii, 9).

In the year 394, Theodosius having collected a body of Gauls and Franks, Arbogast ("nexus etiam præcipuo cultu idolorum") succumbed at once (Orosius, vii; Dom Bouquet, i, 597). He withdrew to the mountains, and there committed suicide (Zosimus, iv; Dom Bouquet, i, 584).

Our next authority is the poet Claudian, who, in describing how, in 395, the Vandal Stilicho, who was in the service of Honorius, pacified the Gaul, has these lines:—

"Ante Ducem nostrum flavam sparsere Sycambri
Cæsariem, pavidoque orantes murmure Franci
Procubuere solo."

Claudian, ex. lib de quart. Consul. Hon.
(Dom Bouquet, i, 769).

In other lines, in which he eulogises his favourite hero, he speaks thus:—

" . . . Rhenumque minacem.
Cornibus infractis adeo mitescere cogis,
Ut Salius jam rura colat, flexosque Sycambros.
In falcem curvet gladios, geminasque viator
Cum vident ripas, quæ sit Romana requirat :

" . . . Provincia missos

Expellet citius fauces, quam Francia Reges,
Quos dederis. Acie nec jam pulsare rebelles,
Sed vinclis punire licet. Sub iudicio nostro
Regia Romanus disquirat crimina carcer.
Marcomeres Sonnoque docent; quorum alter Etruscum
Pertulit exilium; cum se promitteret alter
Exulis ultorem, jacuit mucrone suorum.
Res avidi concire novas, odioque furentes
Pacis, et ingenio acclerumque cupidine fratres."

(Ex lib. de laud., Stil. Dom Bouquet, i, 771.)

From this we see that Marcomir and Sunno, the two Frank kings, were brothers. The former was, about 397, carried off to Honorius, who imprisoned him and afterwards sent him to Etruria, while his brother was killed by his own people.

When, in the year 403, Stilicho marched the legions of Gaul and Britain towards Rome, which was being attacked by Alaric the Goth, the Rhine was left without defence, and various hordes of Vandals, Suevi, Burgundians, and others crossed the river and attacked Gaul. According to Renatus Frigeridus, an otherwise unknown author quoted by Gregory of Tours, the Vandals had a terrible struggle with the Franks, in which their king, Godegisel, was killed, and about 20,000 men perished. The Vandals would have been exterminated if the Alans (as Messrs. Taranne and Guadet read it, and not Alemanni, as most of the manuscripts have it) had not gone to their rescue. Jovinus, the usurper in Gaul, had Franks in his army, so had Constantine, who was proclaimed Emperor in 407, and about the year 412 we are told that the Franks pillaged and burnt the city of Trèves, while shortly after Castinus, the commander of the domestic guards, was put at the head of an army and sent into Gaul against the Franks (Gregory of Tours, ii, 9).

Sozomen, in describing the struggle between Honorius and Constantine, states that the latter sent his commander, Edobich, across the Rhine to get assistance from the Franks and the Alemanni (Sozomen, lib. ix; Dom Bouquet, i, 606).

At this time the Franks were apparently divided into two well-marked sections—those who were free answering in the main to the Ripuarians, who lived east of the Rhine; and those who were in the condition of Læti, or military colonists, who lived west of that river. Marcomir and Sunno, of whom we have written, were doubtless the chief of the Ripuarians; so also probably was Theodomir, the son of Richimir, of whom Gregory of Tours, quoting the "Consular Fasti," says that he was massacred with his mother, Aschila. He says also that at that time Clodion, equally distinguished among his people for his nobility and merit, was king of the Franks. I take this Clodion to have been the chief of the Læti, or Stipendiary Franks.

In the early genealogy of the Frank kings extracted from a codex at Saint Gallen by Pertz (iii, 307), he heads the list; in others he is made the son of the fabulous Pharamund. Gregory says he lived at Dispargum, in the country of the Tongri.

The site of Dispargum has been much debated. It is called *Castrum Dispargum* by Gregory of Tours; *Castellum Disbargum* by Aimoin; and *Castrum Dispartum* by Trithemius. According to Ortelius and Pontanus, it was Duisburg, between Wesel and Dusseldorf, on the Roer, five leagues from Dusseldorf. According to Du Bos, Duysbourg, between Brussels and Louvain, two leagues and a half from Brussels. Eccard identified it with Disborg, near Smalkald, in the principality of Henneberg, in Franconia; and according to Chifflet, Henschenius, Vredius, Boucher, Mantelin and Wendelin, Diest in Brabant. Diest seems never to have been called Dispargum, but was called Diosta in the sixth century, and in the ninth its dependent district was called the "*Pagus Diestensis*," while the name Dispargum occurs as late as 986 ("*Mémoire sur l'Établissement des Franks dans la Belgique*," 368). Gregory of Tours expressly says that in going from Dispargum to Cambrai the Franks had to cross the Rhine. This seems to limit the sites to Duisburg near Wesel, Disborg in Franconia, Doesburg near Zutphen, or Desenberg in Westphalia, between the claims of which I don't see my way to deciding.

Gregory of Tours tells us, quoting the "*Consular Fasti*," that Clodion, having sent people towards Camaracum (*i.e.*, Cambrai) to explore, followed himself, and, having attacked the Romans, seized the towns of Tournai and Cambrai, after living there awhile he extended his conquests to the Somme (*op. cit.*, ii, 9).

Roricon, a very unsafe authority, says he extended his conquests to Amiens, where he reigned (Dom Bouquet iii, 4); and we have no better source than the "*Gesta Francorum*" for the statement that he reigned for twenty years (Bouquet, ii, 544). The "*Gesta Francorum*" were compiled in the earlier part of the eighth century. The editors of Bouquet date his attack on Cambrai in 445. Prosper of Tyre, under the year 427, has the entry, "*Clodius regnat in Francia*" (*id.*, i, 638).

Sidonius Apollinaris, in his panegyric on Majorian, tells us how Cloio invaded the country of Artois, whereupon Majorian and Ætius marched against him, and surprised him at the village of Helena, which some identify with Lens, while celebrating a marriage. His somewhat inflated lines are as follows:—

"Post tempore parvo
 Pugnatis pariter, Francus qua Cloio patentes
 Atrebatum terras pervaserat. Hic cocuntes
 Claudebant angusta vias, arcuque subactum.
 Vicum Helenam, flumenque simul sub tramite longo
 Artus suppositis trabibus transmiserat agger.
 Illic te posito, pugnabat ponte sub ipso
 Majorianus eques. Fors ripæ colle propinquo.
 Barbaricus resonabat hymen. Sythiciisque choreis
 Nubebat flavo similis nova nupta marito.
 Hos ergo ut perhibent, stravit; crepitabat ad ictus
 Cassis et oppositis hastarum verbera thorax
 Arcebat squamis donec conversa fugatus
 Hostis terga dedit. Plaustris rutilare videres
 Barbarici vaga festa tori, convictaque passim
 Ferula, captivæque dapes, cirroque madente
 Ferre coronatos redolentia ferta lebetas, etc."

(Dom Bouquet, i, 802.)

The editors of the work just quoted state in a note that this fight has been frequently assigned to the year 428, in which year, according to Prosper of Aquitaine and Cassiodorus, the district near the Rhine held by the Franks was reconquered by Ætius. "Pars Galliarum propinqua Rheno quam Franci possedendam occupaverant Ætii Comitibus arma recepta," says Prosper of Aquitaine (Bouquet, i, 630); but this date is at issue with the chronology of Majorian's life, as is that of the entry in Idatius in the year 432: "Superatis per Ætium in certamine Francis et in pace susceptis (*id.*, 617), and they therefore date the event about the year 446.

There is a curious entry in Priscus which refers, probably, to Clodions' reign. He tells us how Attila fought against the Franks, and caused the death of their king, and how a dispute arose about the succession between his sons, of whom the elder sided with Attila, and the younger with Ætius. The latter Priscus himself saw at Rome, and describes him as a young man just growing his beard, and speaks of his golden locks streaming over his shoulders. He tells us he was adopted by Ætius, and was presented with many gifts by him and by the emperor (*id.*, 607-8). The king, who was thus killed by Attila, apparently about 449 or 450, has been considered by some to be Clodion, but the learned Benedictines argue against this, and suggest he was the chief of the Ripuarians, and not of the Salians, and that his son led the contingent of Franks in the Hunnic service, who came from the river Necker, and who are thus apostrophised by Sidonius Apollinaris, in his panegyric on Avitus:—"Udosa quem vix Nicer abluit unda, Prorumpit Francus" (*id.*, 607-8, note a).

It is curious to compare the name Clodius, or Clodio, of the Frank king whom we have here described, with the Roman family name Clodius. We do not know when Clodion died.

Gregory of Tours tells us that the King Meroveus, who had for a son Childeric, was of his stock (*op. cit.*, ii, 9). Fredegar, in his "Epitome," makes Meroveus the son of Clodio, and has the following strange notice:—

"Hæc generatio (i.e., that of the Franks) fanaticis usibus culta est. Fertur super litore maris æstatis tempore Chlodeone cum uxore resedente meridie, uxor ad mare lavatum vadens, terretur a bestia Neptuni, qui Minotauro similis eam ad petisset. Cumque in continuo aut a bestia aut a viro fuisset, concepit, ac peperit filium, Meroveum nomine, a quo Reges Francorum postea Merovingii vocantur" (*id.*, ii, 395-6).

In the "Gesta Regnum Francorum" nothing is said about Meroveus having been the son of Clodion, but there is merely a mention of him as his successor (*id.*, ii, 544). Under the year 448 we have, in Prosper of Tyre, the entry, "Meroveus regnat in Francia" (*id.*, i, 640).

It is curious that Gregory of Tours tells us no facts about Meroveus himself, and I am strongly disposed to agree with Mr. Perry in his suspicions, that he has been created to explain the name of the dynasty, namely, that of the Merovingians, or Mervings, who, as we have seen, bore a name of much older date. It is true that Meroveus occurs as a royal name at a later date. Thus we have one so called who was a son of Chilperic I, and another who was the son of Chlothaire II; but in the notices above quoted, with the legendary air that surrounds them, we seem to be on the traces of a mere eponymous creation. We must remember also that in a genealogical table attached to an old MS. of the Salic Laws, and given by Bouquet, which derives the royal stock from Pharamund, we read that the latter bore Cleno and Cludion, that Chludius bore *Chlodebaud*, who bore Chloderic, the father of Chlovis (*op. cit.*, ii, 696). Meroveus is not named at all in this list, and Chlodebaud takes his place.

Reverting to our story, we find that when Attila invaded Gaul, and was encountered by Ætius, the latter had both Goths and Franks in his army. After defeating the Hunnic king, we are told by Gregory of Tours that he persuaded the Frank king, who had been his ally, to withdraw, by persuading him that if he did not return home some one might seize his throne (Gregory of Tours, *op. cit.*, ii, 7).

Jornandes, who describes the same struggle, enumerates the allies of Ætius thus: Franci, Sarmatæ, Armoritiani, Litiani (i.e. Letæ), Burgundiones, Saxones, Riparioli (i.e. Ripuarians), and Ibriones (or Olibriones, who lived east of Lake Constance) (*op. cit.*, ch. 36; Dom Bouquet, ii, 23).

Jornandes further tells us that in this terrible struggle with the Huns, 162,000 were killed on each side, besides 15,000

(some copies say 90,000) Gepidæ and Franks, who killed each other in a struggle the night before the battle—the former fighting for the Huns, and the latter for the Romans.

Sidonius Apollinaris, as we have seen, in his panegyric on Avitus, mentions the Franks from the Necker as aiding Ætius (Dom Bouquet, i, 806).

Gregory of Tours, as we have said, suggests, in a doubtful manner, that Meroveus was the father of Childeric. "De hujus stirpe" (i.e., of Clodion), he says, "quidam Merovechum Regem fuisse adferunt, cujus filius, fuit Childericus" (*op. cit.*, ii, 9). With Childeric we are on firm ground. Gregory tells us he gave himself up to his passions, and dishonoured the daughters of the Franks over whom he reigned. They accordingly drove him out, and he sought refuge in Thuringia (*Thoringiam petiit*), leaving behind him a man whom he could trust (*id.*, xii). Fredegar, in his "Epitome," calls this man Wiomad, and says Childeric had released him when he was being carried off with his mother by the Huns (Dom Bouquet, ii, 396). In order that the two might have a common sign, Wiomad broke a gold coin in two, and told him that when he sent him a message he would send him the other piece, and if it fitted his own he would know that all was right, and that he might return home again. Childeric repaired to the King of Thuringia, Basin, and to his wife Basina. When he had gone, Gregory tells us that the Franks unanimously elected Ægidius, who sustained—in a small portion of Central Gaul, limited by the Oise, the Maine, and the Seine—the continuity and traditions of the Roman empire.

Wiomad now, according to Fredegar, began to intrigue; he persuaded Ægidius to impose heavy taxes upon the people, and when they were still content to be taxed, rather than trodden under by Childeric, he advised him to break the pride of his new subjects by killing a number of them. Wiomad, having himself counselled this course, turned to the Franks, and denounced him, saying it did not suffice him to tax them so heavily, but he must treat their relatives like cattle, and kill them (Dom Bouquet, ii, 396). At length they were ready, and after Ægidius had reigned over them for eight years, Wiomad sent the half of the gold piece, and Childeric once more returned. According to Fredegar, he was met at the castle of Bar (he does not say which—Bar le Duc, Bar sur Aube, or Bar sur Seine) by his *leudes*. He then relates a story in which Childeric is made to have intercourse with the Emperor Maurice, who lived 100 years after his death, and which is fabulous. Gregory tells us that, after his return, Basina, the wife of his late host, went to him and deserted her husband. In answer to his inquiries why she had gone, she gave what Mr. Perry judiciously calls a naïve answer: "Novi

inquit, utilitatem tuam, quod sis valde strenuus: ideoque veni ut habitem tecum: nam noveris, si in transmarinis partibus aliquem cognovissem utiliorem te, expetissem utique cohabitationem ejus. At ille gaudens, eam in conjugis copulavit, quæ concipiens peperit filium, vocavitque nomen ejus Chlodovechum. Hic fuit magnus, et pugnator egregius" (*id.*, ii, 168). Such, then, was the origin of the famous Chlovis, who became the founder of the empire of the Franks. Fredegar gives a fantastic account—*suo more*—of his conception (*vide* Dom Bouquet, ii, 397).

We now find Childeric and his Franks in alliance with the Romans. He is found at Orleans, which was apparently menaced by the piratical Saxons, who, under Odoacer, had advanced to Angers. On the death of the Count Ægidius, he was succeeded by his son, Syagrius. We then read of Odoacer taking hostages from Angers and other towns, while the Bretons were driven from Bourges by the Goths (*i.e.*, by the Visigoths of Aquitaine) who killed a great number of them near Deols. The Count Paul, with the Romans and the Franks, fought against the Goths, and took much booty from them. At Angers a strange revolution took place. Odoacer, having arrived there, was followed the next day by Childeric, who killed the Count Paul, and took possession of the town (Gregory of Tours, ii, xviii). This was probably after defeating the Saxons. What Childeric's position was at this time it is hard to say, and it has been argued that he was in fact the generalissimo of the forces which were still controlled by the fragment of the Roman Empire that remained. According to Idatius, Ægidius died on the 19th of November, 464, and was succeeded by his son Syagrius.

That Childeric should have killed the Count Paul himself has seemed so inexplicable to some historians, that they have transferred that feat to Odoacer (Cochet, "Le Tombeau de Childeric," 10, note; Capifigue, "Chlovis et les Mérovingiens," 73).

We, however, next hear of Childeric, in alliance with Odoacer, attacking the barbarians who were assailing Italy. According to some these were Alemanni; others make them Alans. This war apparently terminated about 471. Childeric is mentioned in the "Life of St. Géneviève," and mentioned as if he had control of the city of Paris (Dom Bouquet, iii, 370).

The death of Childeric has been most probably fixed, although we have no absolute data, about the year 481. Roricon says he died at Amiens. This is, however, uncertain. What is certain is that he was buried at Tournai, perhaps the capital of his kingdom. "Urbs Tornacensis quæ quondam fuit regalis civitas," says St. Ouen in the seventh century, in his "Life of St. Eloi" (Cochet, *op. cit.*, 11, note 5). There his tomb was discovered

in 1653, and some of its famous contents, so interesting in the history of early art, after curiously romantic adventures, were eventually deposited in the Louvre, where they may be still seen. They have been illustrated with singular learning and perseverance in the Abbé Cochet's work above cited, which has become an archæological classic. Childeric was succeeded by his son Chlovis, whose history has been so profusely illustrated, and is so familiar that we need not do more than epitomise the steps by which an empire was created out of the petty kingdom of Tournai. Gaul was at the time of his accession divided into several fragments. Of the old Roman dominion there remained under Syagrius, according to the researches of M. Biet and Lebœuf, Laon, Auxerre, Troyes, Meaux, Rheims, Beauvais, Senlis, Paris, and perhaps Chartres, Rouen, and Orléans: the capital of the whole being Soissons (Cochet, *op. cit.*, 8, note 3).

Armorica, including the whole coast from the Seine to the Loire, was independent; the Visigoths held Southern Gaul as far north as the Loire, and as far east as the "Pagus Vellavus" (Auvergne). The Burgundians were bounded on the west by the Visigoths, and towards the Roman fragment by the "Pagus Lingonicus"—the Upper Marne (Perry, "The Franks," 70 and 71). The Franks were divided into two sections, of which the Salians were alone, as yet, subject to Chlovis, the Ripuarians obeying an independent line of princes. These Ripuarians, who, as we have argued, previously lived on the Maine, crossed the Rhine as settlers after the Huns had devastated its borders. It was then, says the very old "Life of St. Remigius," upon which Hincmar founded his biography, that they occupied Cologne and Trèves (Dom Bouquet, iii, 374). They made Cologne their capital, whence Eginhardt speaks of it as "Ripuariæ metropolis." Five years after his accession (*i.e.*, in 486), Chlovis, in alliance with his relative Ragnachar, who ruled over the Franks of Cambrai, proceeded to attack Syagrius, who was speedily beaten and took refuge with Alaric, king of the Visigoths, from whom the victor demanded his surrender. Afraid of the anger of the Franks ("for fear," says the orthodox Gregory of Tours, "is habitual to the Goths," who, it will be remembered, were Arians) they surrendered Syagrius, who was shortly after put to death and his dominions were appropriated (Gregory of Tours, i, 94, 95). Among the booty on this occasion was a vase, remarkable for its size and beauty, which Chlovis wished to take to himself, but a rude soldier smote it with his axe, saying that he must take only what fell to him by lot; he was merely "primus inter pares." Chlovis revenged himself a year later at an inspection of the troops, where he professed to be dissatisfied with the condition in which he had

kept his arms, and clove him to the ground. Five years later (*i.e.*, in 491) Chlovis marched against the Thuringians, and conquered them (*id.*, 95, 96).

The Thuringians were the countrymen of his mother, Basina. In another passage Gregory of Tours recalls some incidents of this war, and makes Theodoric, in inciting the Franks against the Thuringians, recall how the latter had first attacked them, and had cruelly ill-treated the hostages they had given; how they had hung their infants on trees, had dragged their maidens asunder, by tying horses to their arms and then incited them to spring forward with pointed needles; how others of them were nailed to the ground with spikes, while carts were driven over them, their remains being left to the dogs and wild birds (Gregory of Tours, iii, 7).

The Burgundian king, Gonderic, had four sons—Gondebaud, Gondegisel, Chilperic, and Gondomar. Chilperic was drowned by Gondebaud. He left two daughters—Chrona, who took the veil, and Chlotilda, whose beauty had reached the ears of Chlovis. He sent to demand her in marriage, a demand which her uncle was constrained to obey. She presently had a son, Ingomar, whom she insisted upon having baptized. He died in the font, whereupon Chlovis bitterly reproached her, and said it would not have been thus if he had been consecrated in the name of his own gods. She continually urged him to become a Christian, but it was only in the fifteenth year of his reign, *i.e.*, in 496, when in a struggle with the Alemanni, and when the Franks were being beaten, that he appealed to the God of Chlotilda to aid him, promising (if successful) to become a Christian. Thereupon the Alemanni, who had lost their king, gave way and agreed to become his subjects (*id.*, 99, 100). This battle was fought at Tolbiach, the modern Zulpich, near Cologne. The dates of this and preceding events in Chlovis's career depend upon Gregory of Tours. They look suspicious and artificial, each event of importance being separated from the next by an interval of five years.

After the battle the queen is said to have summoned St. Remi, who urged his cause with the Frank king. His only objection was on the ground of the opposition of his people, but this was dissipated when he related what they owed to the God of the Christians. The public squares were shaded with dyed cloths, the churches hung with white curtains, and Chlovis, with 3,000 of his people, and his sister Albofleda, who shortly after died, were baptized. Latechilda, another sister, who was an Arian, was rebaptized. It was on this occasion that Gregory reports the very problematical story of St. Remigius having said, "Bow thy head humbly, Sicamber; adore that which thou hast burnt,

burn that which thou hast adored" (*id.*, 101). According to Hincmar, in his "Life of St. Remigius," many of the Franks now abandoned Chlovis, and joined his relative Ragnachar beyond the Somme ("Acta Sanct.," Oct., i, 94; Perry, "Franks," 80, note).

What he lost in this way Chlovis amply made up in others, for he became the ally of the orthodox clergy everywhere in their struggle with the Arians. Thus, about the year 493, we are told by Procopius, that the Franks made overtures to the Armoricans for an alliance, since they were both Christians. They accordingly made a compact. The next passage in Procopius is singularly curious, and seems to point to Armorica still remaining partly subject to Roman officials. It says that certain Roman soldiers, who were in the stations of the extreme parts of Gaul, since they could not return to Rome (it being in the hands of the Goths), nor did they wish to go over to their Arian enemies, committed themselves, with their standards and the region which they previously guarded as Romans, to the Armoricans and Germans (with Procopius, German = Frank). They retained all their customs, "which their descendants keep to this day" (*sic*): furnishing a regular military contingent and keeping their own laws, and other Roman customs, (Dom Bouquet, ii, 30, 31). This is assuredly very interesting in view of recent discussions about the survival of Roman customs on this side of the Channel. I may add that Gregory of Tours, in his work on the Martyrs, speaks of the Franks, when still pagans, having made an assault upon Nantes, and having been frightened into a retreat by the appearance of a vision (Dom Bouquet, ii, 465).

We now find Chlovis at war with the Burgundians, who then occupied the districts near the Rhone and Saone, and the province of Marseilles. To this war he was incited by Gondegisl, who was at issue with his brother Gondebaud. During the struggle which took place on the river Ouche, Gondegisl deserted with his men. Gondebaud was defeated, and retired to Avignon, and Gondegisl to Vienne. Chlovis does not seem to have pressed his advantage, and accepted the offer made by Gondebaud through his friend Aridius—which he apparently did not keep—to pay tribute. Free from his dangerous enemy, Gondebaud turned upon his brother, forced an entrance into Vienne by a drain, and killed Gondegisl with the Arian bishop (Gregory of Tours, 103–109). Procopius, who describes this war, tells us that the Goths of Theodoric and the Franks had agreed to make a joint campaign. That monarch, who was not sorry to see his neighbours fighting, ordered his men to march slowly, so that they might arrive late. If they heard the Franks were beaten they were to retire; if victorious,

to go on. The Goths took no part, therefore, in the fight; but they shared the spoils, and Burgundy was divided between them and the Franks (Dom Bouquet, ii, 31, 32). This war took place about 500 A.D.

Some of the chroniclers now report a curious story, namely, that on one occasion Chlovis sent an envoy named Paternus to negotiate peace with Alaric, the King of the Visigoths. It was arranged that the two kings, with their followers, should meet, and that Alaric should, after the manner of the ancients, touch the beard of Chlovis, and swear fealty to him. It was agreed that each king should be attended by a few followers, who should go to the meeting unarmed. Paternus returned home, and Chlovis set out for Aquitaine for the trysting-place. He sent Paternus to make inquiries, who found that the Goths, instead of staves, had with them concealed arms. He accordingly accused Alaric of a base fraud, and suggested that they should appeal to Theodoric, the King of the Italian Goths, to settle the penalty. He, wishful to keep the feud between his neighbours alive, suggested that Paternus should ride on horseback into the space before Alaric's palace and hold out his spear, and that the Goths should then pour money upon it till its point was covered (Roricon says the lance was to be thrust into the ground), and this was to be paid over to Chlovis. Alaric refused to carry out this decision. He, however, entertained Paternus at his palace, and showed him his various treasures. According to Fredegar he took up one of the gold pieces, and thrusting it into his pocket, said, "*Hos solidos adarrabo ad partem domini mei Chlodovei Regis et Franci.*" When he returned, Chlovis assembled his notables and made them a warlike speech (Fredegar, Dom Bouquet, ii, 463-4; Roricon, *id.*, iii, 14, 15; Aimoin, *id.*, iii, 41). At this time the Visigoths were masters of the greater part of Spain, and of the country between the Loire and the Rhone, and were governed by Alaric, the son of the famous Euric. We are told that Chlovis professed great distress that so much territory was possessed by Arians—a Pharisaic view endorsed, no doubt, by many orthodox subjects of the Visigoths, and which greatly weakened their cause. He accordingly marched against the latter, and encountered them at Vouglé, near Poitiers. This was in the year 507. We are told the Goths fought with the lance, but the Franks with the pike (*vide*). The Visigoths were defeated, Alaric was killed, and Chlovis, struck on either side by the enemy's weapons, owed his safety to his excellent cuirass and the speed of his horse. Alaric's son Amalaric fled to Spain, where he continued to rule. Chlovis sent his son Theodoric to overrun Auvergne, and we are told he subdued for his father all the district, from the

frontiers of the Goths to those of the Burgundians. Chlovis himself wintered at Bordeaux, and apparently conquered in person Poitou, Saintonge, and the Bordelais (Aimoin, Dom Bouquet, iii, 42; Capifigue, 95). He carried off the treasures of the Visigothic kings from Toulouse, and marched upon Angoulême, which he captured (Gregory of Tours, 114, 115; Aimoin, *loc. cit.*). The Franks, at this time in conjunction with the Burgundians, also attacked Arles, and ruined a monastery there (*ez.* "Vit. S. Cæs. Episc. Aral.," Dom Bouquet, iii, 384). This siege of Arles is also mentioned by Cassiodorus in his letters. It took place in 510 (*id.*, note).

Before they defeated Alaric, the Franks, according to Procopius, had laid siege to Carcassonne. After his defeat they renewed their attack upon that town. Meanwhile the Great Theodoric had sent an army to the rescue of his compatriots, which completely defeated the Franks (Procopius, "De Bell Goth"; Dom Bouquet, ii, 32, 33). Jornandes tells us the Gothic commander was called Hibba, and that 30,000 Franks perished in the struggle (Dom Bouquet, 702). The Goths then conquered the part of Gaul from the Rhone to the sea, but as they could not hold it, Theodoric restored it to the Franks. The rest of Gaul he annexed, and having put prefects there, imposed a tribute on it (Procopius, Dom Bouquet, 33; Isidore of Seville, *id.*, 702). After the Frankish defeat it would seem that Chlovis raised the siege of Carcassonne, and returned to Aquitaine, where he capture Angoulême, a portion of whose walls, like those of Jericho, miraculously fell (Capifigue, 95, 96). He now presented some rich gifts at the church of St. Martin at Tours, where he received from Anastasius the purple tunic, the chlamys, and the diadem (Gregory of Tours, 115), *i.e.*, consular honours.

He was not nominated actually Consul, for his name does not occur in the *Consular Fasti* (*id.*, note). Having distributed largess widely he returned to Paris.

He was now virtually master of all Gaul, and yet he was merely the Imperator of the Frank forces. Among the Franks there were other chiefs, independent of himself, and subservient to him, only apparently, for the purposes of war, or some general enterprise. It was to the subjection of them that he now turned. First he attacked Sigebert, the ruler of the Ripuarian Franks, whose capital was Cologne. Sigebert had taken part in the battle of Tolbiac against the Alemanni, and had been wounded in the knee, whence Gregory of Tours refers to him as Sigebert the lame (*id.*, ii, 37).

Mr. Perry says the kingdom of Sigebert extended along both sides of the Rhine, from Mayence to Cologne to the west, along

the Moselle as far as Trèves, and on the east to the river Fulda and the borders of Thuringia (*op. cit.*, 91).

Sigebert's son, Chloderic, took part in the war against the Visigoths (Gregory of Tours, ii, 37). Chlovis now persuaded the young man that by putting away his father he would secure the throne and his own friendship at the same time. Chloderic seems to have eagerly listened to this counsel, and on one occasion, when his father left Cologne and went for an excursion in the Buchonian forest near Fulda, he assassinated him in his tent. He sent to inform Chlovis of what he had done, and asked him to send some messengers to receive some of the spoil. One of these, apparently instructed by his master, took the opportunity, when the young man was stooping, and had his hand buried in his father's treasure-chest, to cleave in his skull with his francisca.

Chlovis now went to Cologne, and addressing the people there, said: "While I was sailing on the Scheldt, Chloderic, son of my relative, told his father that I wanted to kill him. When Sigebert fled to the Buchonian forest, he himself sent assassins after him, who killed him, and presently he himself was slain." Chlovis urged that he had had nothing to do with the slaughter of his relatives. He went on to urge them to accept him as their sovereign, which they accordingly did, raising him aloft on a shield. The orthodox Bishop improves the occasion in unctuous language, and attributes Chlovis's continuous successes to his close attention to the duties of religion.

Chlovis next attacked Chararic, who, it would seem, was established with his people near Therouanne. During the war with Syagrius, Chlovis had called him to his aid, but he stood aloof from the fight, with the intention of joining the victor. Chlovis now marched against him, captured him and his son by craft, and made them both accept the tonsure. This cutting off of their locks, so dear to the long-haired race, drew forth from the younger prince an exclamation that the branches were cut off from a young tree which would speedily sprout fresh ones; and he ventured to prophecy the speedy death of Chlovis, whereupon he had them both decapitated, and annexed their kingdom (Gregory of Tours, iii, 41). There still remained another Frank king, named Ragnachar, who, according to Mr. Perry, ruled north of the Somme, in Flanders, and Artois, with his capital at Cambrai (*op. cit.*, 94). He was a dissolute person, and given to the basest crimes, which, together with his attachment to a favourite named Farron, disgusted his subjects. Chlovis corrupted his *leudes*, or immediate friends, with presents of bracelets, and baldrics made of gilt copper, which he passed off upon them for gold. He then marched against him, crossed the

Somme, and defeated him. With his brother Richair he was brought before the conqueror, his hands being tied behind him. Chlovis reproached Ragnachar with having disgraced their common blood by allowing himself to be manacled instead of having sought death, and reproached Richair with having helped him, and he clove them both down with his axe. The *leudes* having complained of the base metal he had palmed on them, he replied that they deserved base coin who so basely betrayed their master, and that they might deem themselves fortunate their lives were spared. A third brother, Rignomar, was put to death in the city of Mans. Chlovis, we are now told, appropriated their kingdoms and treasures, and, having killed several other kings whose rivalry he feared, he extended his dominion over all Gaul. Gregory of Tours speaks of these various kings as his relatives, and makes him hypocritically regret that after their death he was like a traveller among strangers, and without any one to succour him in adversity. He adds that this was a ruse to discover if any relative survived whom he might kill (Gregory of Tours, xxii, 42). The term "relative," with Gregory, probably connotes one belonging to the common sacred stock of the Mervings, or Merovingians.

Chlovis died at Paris on the 27th of November, 511, and was buried there, in the basilica of the Apostles, which he had built. It is not our purpose to carry the history of the Franks any further. We have tried to trace it from its dim and shadowy beginnings to a time when Chlovis had subdued all Gaul, and was virtually master of the country, as far as the Elbe in the east, and the Pyrenees in the west. It will be noted that the Saxons nowhere occur at this time as the occupants of nether Saxony. It was the purpose of two previous papers to show that they were not in fact there until a later date, and first invaded nether Saxony, and settled in it in the reign of Chlovis' sons.

To sum up the general results of this paper. We claim to have shown—(1) that the Franks were not the early dwellers in the Rhine valley under a new name, but that they were a new people, who were otherwise and elsewhere known as Varini and Varings, and who, like the Angles and Saxons, with whom they were so closely associated in early times, were a tribe of low Germans from beyond the Elbe; (2) that when they invaded the borders of the empire, and settled within them, they did so as the Saxons did in South Britain—not as conquerors, but as colonists. Our next paper will deal with the Lombards.

ANTHROPOLOGICAL MISCELLANEA.

To the Editor of the "Journal of the Anthropological Institute."

DEAR SIR,—In a recent number of the "Journal of the Anthropological Institute," I wrote a paper in which I endeavoured to criticise the various current theories about the origin of the Franks, and proposed, as I thought, a new one in deducing them from the Varini. Incidentally I referred to the very old and very obvious notion of the apparent connection between the Varini and the Varangians. When I had nearly finished my paper I turned to a memoir by Mr. Hyde Clarke, with the main conclusions of which I found myself in disagreement, but in which I found a passage about the Carini which I thought new and ingenious, and which I incorporated, duly acknowledging my authority, as is my universal practice—a practice so uniform with me that I have been jeered at by some of my friends, who deem me morbid in this matter. Much to my astonishment I find, in the last number of the "Journal," a letter from Mr. Hyde Clarke, most ambiguously phrased, which seems to imply that in writing this paper I took my materials and my theory from himself without acknowledgment, and even had the effrontery to do so from a paper published in this very Review. I certainly feel embarrassed in meeting such a charge. If there be any persons who have seriously been affected by it I must ask them to compare the papers in detail. If they find that Mr. Clarke has anywhere connected the Franks and the Varini, or has otherwise trodden any part of the way in which I have travelled in my induction, other than the common ground of all inquirers since the revival of criticism, he shall have ample amends.

Mr. Clarke's letter compels me to say, in the most emphatic manner, that I repudiate any obligations to him of any kind in this matter, except those I have acknowledged.

I remain,

Yours respectfully,

H. H. HOWORTH.

Derby House, Eccles,
August 8th, 1883.





FIG. 1.



FIG. 2.

THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

JUNE 26TH, 1883.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the AUTHOR.—Indian Migrations as evidenced by Language.
By Horatio Hale, M.A.

— The Tutelo Tribe and Language. By Horatio Hale, M.A.

— On Daneholes. By T. V. Holmes, F.G.S.

From the BERLIN ANTHROPOLOGICAL SOCIETY.—*Zeitschrift für Ethnologie*. 1883, Heft 2.

From the INSTITUTE.—Proceedings of the Canadian Institute.
Vol. I, No. 4.

From the SOCIETY.—Journal of the Society of Arts. Nos. 1595, 1596.

— Transactions and Proceedings and Report of the Royal Society of South Australia. Vol. V.

From the EDITOR.—*Bullettino di Paletnologia Italiana*. 1883, Nos. 3, 4, and 5.

— "Nature." Nos. 711, 712.

— *Revue Politique*. Tom. XXXI, Nos. 24, 25.

— *Revue Scientifique*. Tom. XXXI, Nos. 24, 25.

— "Science." Nos. 2-18.

The election of ERNEST G. RAVENSTEIN, Esq., F.R.G.S., was announced.

MR. W. G. SMITH read a paper "On Palæolithic Implements from Leyton and Walthamstow."

The following paper was then read by the author:—

NOTES on the ABORIGINAL RACES of the NORTH-WESTERN
PROVINCES of SOUTH AMERICA.

By R. B. WHITE, Esq., F.G.S.

THIS paper refers to a strip of country about 600 miles in length by from 100 to 250 miles in width, bounded on the west by the Pacific Ocean, and extending from 1° north latitude to the 8th parallel. It is now embraced by the States of Cauca and Antioquia, two of the nine States of the Colombian Union, which was formerly called New Granada.

The country is traversed by the great valleys of the rivers Cauca, Atrato, San Juan, and Patia, and these are enclosed by the Andes Cordillera and its ramifications, whose mountain peaks attain heights of from 15,000 to 18,000 feet above the level of the sea. Elevated tablelands lie in some instances on the flanks of the mountain ranges, at a height of from 5,000 to 8,000 feet above the sea.

On the Pacific Coast, and in the valleys of the Atrato and San Juan rivers, it rains almost without interruption during the whole year, and the temperature ranges from 80° to 90° Fah. on an average.

In the Cauca and Patia valleys the year is divided into two rainy and two dry seasons, and in the lower parts of these valleys the heat is excessive during the dry season.

The seasons on the tablelands are similar, but naturally a low average temperature prevails. In some parts of Antioquia the mean temperature is 50°.

Perhaps there is no country in the world, of equal extent, in which such surprising variations of climate are found.

It may reasonably be supposed that these conditions must have a great influence upon the races inhabiting these regions, and I have therefore mentioned them at the outset.

When the Spaniards first discovered this country, they found the kingdom of the Incas reaching to the confines of what is now the State of Cauca. To the east the most notable people were the Chibchas, under the sway of the Zipa, who resided at Bogotá. Northwards, through the Isthmus of Panamá, nume-

rous barbarous tribes held the country up to the confines of the great nation which existed in Guatemala and Central America.

But the whole of the region under consideration was peopled by races of a low grade of civilisation, so numerous and varied that the Spaniards could make nothing of them. Distinct tribes speaking distinct languages occupied each a few square leagues of country.

Their customs were different. They were constantly at war one with another, and these wars appear to have been made less with the idea of rectifying their frontiers than with that of replenishing their larders, for they were almost all cannibals.

This region would appear to have been the Siluria of that part of South America. It was the refuge of the peoples whose want of organisation, or whose physique and habits, made them unable to cope with the civilised Chibchas and Incas.

But although climatic influences must have assisted in producing changes in the races which were scattered over this country, yet in my mind they would not account for the diversity of language and of religious customs which were so marked. Distinct races must have immigrated and formed settlements, not always perhaps where they would wish, but where they were allowed by previous settlers. Defeated tribes would fall back before the conquering Incas, and in their turn win for themselves a new territory, probably evicting some weaker people, who, reduced in numbers, would seek an asylum elsewhere.

The scattered remnants which are still left of these nations maintain their distinct character. Although they have no government, nor even a clannish organisation, they yet seem instinctively to keep together. The different tribes have as little sympathy one with another as they have with the Spanish settlers.

In the hilly districts of the north-west of the State of Antioquia many rivers take their rise which communicate more or less directly with the Atlantic Ocean. These rivers run through lovely valleys in the upper part of their courses, having temperate climates and fertile soils. Here a great race of Indians existed, who were fairly well governed and federated.

The pottery and goldsmith's work which we discover in their burial-places are very fine. The Spanish explorers rifled tombs containing enormous treasure, and they waged a war of extermination with these tribes because they barred the passage between the Darien Settlements and the interior.

This people was the only one in the region under notice who buried their dead in tumuli. These they constructed on the

hills and ridges, where they may be seen by hundreds. The ordinary size of a tumulus is 40 feet high, but some are very much larger.

The entrance to the tumulus is always to be found towards the rising sun. In construction they differed, apparently, according to the rank of the dead. The poorer class were laid upon a prepared earth floor, made of some special earth, with their arms, tools, and provisions around them, and then the earth mound was raised upon them. Others, probably the rich, were protected by a rough vault, and were laid upon a pavement.

They were buried with every convenience around them for the journey to the other land which they had undertaken. The Spanish conquerors did not take the trouble to find out *where* the Indians thought they were going: they charitably assumed that they were destined for Hades, and one old chronicler, in detailing the completeness of the dead Indian's travelling provision, thinks it was quite superfluous, because, he asks, "Is Hades so very far off?"

The general tradition is that the chiefs had their wives buried alive with them, and certainly skeletons have been found in a sitting posture around a recumbent one, which latter might be the chief and the former his unfortunate wives.

Although the Spaniards rifled many of these tumuli of their contents, and the present inhabitants of the country open a few now and then, yet quite enough remain intact to reward the scientific explorer. The notable graves were always dug out first, but the second class are full of objects of interest, though they may not have the intrinsic value of the gold ornaments of the Indian Dives.

The whole district bears evidence of having been thickly populated, but the Indians built their houses of perishable material, and the sites of their villages and towns are with difficulty recognisable.

Scattered over some 2,500 square miles of country there may be still, perhaps, 2,000 Indians in this part, living subject to the Colombian rule, in their own style.

They are of fair stature, and their features present no special type worth noticing.

They still affect bead belts, and go naked except when they present themselves in the towns. They paint themselves red and blue with anatto and indigo, and whilst ready enough to use a gun, they generally employ their blow-guns with poisoned arrows in the chase. They cultivate maize, and keep horses, cows, and pigs, but they only come to trade in the villages when they require some special article which they cannot otherwise procure.

They are very suspicious, and even when they have been well received at a place, and asked to return, with an offer of a good price for their produce, they will rarely if ever come back until some time has elapsed. They seem to fear that some trap will be laid for them.

They are very dexterous hunters, and are always prowling round in search of game without letting themselves be seen. Many a deer which apparently baffles the white man's dogs, and gets away, falls in reality under the silent arrow of some lurking Indian, who has heard the chase going on, and bags the booty for himself.

At the time of the Spanish conquest these Indians worked many important gold mines in the district, but they have never returned to the pursuit. It is probable that they worked as slaves of their chiefs, and afterwards failed to see the good of working for the Spaniards. The negro, when quite independent, and when living in a state practically as savage as these Indians, will still search for gold, and recognises its use. The Indian seems indifferent to it altogether.

No money will buy what an Indian does not care to part with. If an article is not for sale he will not sell it at any price. He consults his immediate wants, and if they are satisfied he has no idea of gain. But when he comes to trade, then he seems to hold it as a principle that he must try to get as much as he can for his goods, and he does not fail to ask preposterous prices for them.

These Indians retain, so far as one can see, none of their old customs in matters of religion or burial. They conform to the present practices of the country.

The valley of the Atrato, to the west of Antioquia, was inhabited at the time of the Spanish conquest by large and powerful tribes of Indians known collectively as the Chocoes. They had, however, various languages, and must have been divided into different nations. They were of a much lower grade of civilisation than the Indians of the north-west of Antioquia. The river Atrato, and nearly all the streams flowing into it, are navigable for canoes, and thus over an area of 5,000 square miles a great population might exist, possessing the easiest means of communication. Maize and plantains grow with little or no cultivation, and fish abound in the rivers. Thus we may well conclude that the Chocoes would live on the banks of the rivers and streams, using their canoes for travelling, and being little addicted to journeys by land. We hear of their being a savage and troublesome people in their own country, but they do not seem to have molested their neighbours. The race is of a dark colour, short and squat, and with ugly features. They paint

themselves with anatto and oil, which, they say, preserves them from the bites of insects. Although they purchase cotton stuffs and blankets to make clothes for use on special occasions, they still use for loin cloths a fabric made from the fibrous bark of a tree called *Damajagua*. A piece of the bark, which is very thick, is laid upon a log of soft wood, and thoroughly beaten with a wooden mallet, the face of which is scored with grooves crossing each other diagonally. The beaten bark is then placed in running water, to wash away the softened parts, and the operation is repeated until nothing but the fibre is left. A cloth is thus made which is very strong and durable, and is a non-conductor of heat. Pieces of 5 feet in width and 6 feet long are thus prepared. They serve as mats to sleep upon, and it is said that even when wet they do not injure the sleeper.

The whole of the rest of the State of Antioquia was thickly peopled with Indians at the time of the Spanish conquest. Every valley and every plateau seems to have been inhabited by its particular tribe. They were all cannibals, and made war upon each other constantly. They were utterly exterminated by the Spaniards.

Salt is prepared in these countries by evaporating the water from salt springs, and the Indians had large establishments for this purpose. It would seem that salt was a dear article, for wherever salt springs exist which the Indians worked, there the burial-places are found to be richer in gold ornaments than anywhere else, not excepting even the very auriferous districts where the Indians worked mines.

Traces of roads are found coming in from all directions towards such salt springs, and the sites of large buildings may be distinguished.

A salt spring was discovered about five years ago, near Concordia, which had evidently been buried by an enormous landslide. A paved stone channel was found, through which the salt water had been led to the boiling house. In this stone channel was found the complete skeleton of a mastodon whose tusks measured 5 feet in length. The ivory is in good preservation, and there seems good reason to believe that the animal was killed by the landslide whilst drinking the salt water. I have seen necklaces taken out of Indian graves formed of beads made of sections of the fangs of the molars of mastodons. The nerve duct gave the Indians a ready-made hole by which to thread the beads.

The perfect preservation of the bone is so remarkable that I do not believe that these could have been fossil teeth which the Indians dug up and employed. I am inclined to think that the mastodon was contemporaneous with man in recent times in this

country; at any rate, if its unwritten history is ever worked up, this will be a point well worth looking into.

The Indians of the north of Antioquia worked quartz lodes for gold, and their workings are very remarkable. They only possessed stone implements, and yet with these they pounded and dug out the hard quartz in lodes which we find it necessary to use gunpowder upon at the present day. Their style of working was very peculiar. They never drove adits or level galleries into a lode, but invariably sunk vertical pits of about 3 feet in diameter, until they cut the lode. Some of these shafts are 60 and 80 feet in depth, and in their sides little steps were cut to afford a foothold, and give a means of ascent and descent. When they had met with a lode, they never worked the mineral out in chambers, or galleries, but always continued to sink their narrow shaft straight down upon it. They used no timbers for supporting the roof or walls, and for this reason they made their holes or shafts so narrow as not to be liable to fall in. In some cases these shafts will go down 40 to 60 yards on a lode with 30 or 40 degrees of inclination, and as the shafts are so narrow that a man cannot possibly turn round in them, the Indians must have had the fatigue of backing up these holes with their loads, feet first. Now why they should have chosen this difficult and incommodious way of working is a puzzle. They did not do it through lack of intelligence, for the sagacity which their workings reveal in other ways precludes this idea. I have fancied that some superstition was at the bottom of it, for I have met, at any rate, with one amongst the Pasto Indians which is very curious. They only go to seek for gold in the rivers when they want to purchase some special thing which can only be bought with money. But if they extract more gold than they actually want, they throw the surplus back into the river. Nothing will persuade them to sell or barter it, for they say that if they borrow more than they really need, the river-god will not lend them any more.

In the quartz mines they sank their shafts 4 or 5 yards apart, and did not make them communicate below. If a shaft hit upon a poor place in the lode, they did not drive along it to find a better spot, but took all the trouble to sink another shaft a few yards away. They seemed to have aimed at making their operations as tedious as possible.

In some of the auriferous districts of Antioquia these workings are very extensive, and thousands of men must have been employed upon them. The Indians worked the mines under the Spaniards, but these workings are easily distinguished, and show a certain conformity with ordinary mining practice.

One tribe of Indians who inhabited the valley of Aburrá,

where the city of Medellin now stands, appears to have practised cremation. We find in their sepulchres jars of pottery about 2 feet in height and 10 inches in diameter. Each of these jars contains bone ashes and a skull.

All other Indians in the country buried their dead, and it is remarkable that one tribe alone, living in the centre of the country, should have had so distinct a practice. This tribe must have had other peculiarities, for Cieza de Leon, in his history of the discovery of these parts, speaks in strong terms of condemnation of those Spaniards who treated the Indians cruelly, although he was horrified by their cannibalism and vices. But, speaking of the Indians of this valley of Aburra, he says: "The detestation we conceived for these Indians was such that we hung them and their women by their hair to the boughs of trees, and left their bodies there, whilst amidst grievous moans their souls went down to hell."

Now it is strange that this tribe, so specially repugnant, should have had such a distinguishing custom as that of cremation, and it is to be regretted that Cieza de Leon has not told us something of them.

As I have said, all the other Indian tribes, with the exception of the tumulus-builders, buried their dead, and with so little difference as to the mode, that I may speak generally of this, as of their implements.

The Indian graves, or "guacas," as they are called, are constructed on the same plan all over the country. A dry, elevated ridge, composed of easily excavated material, was selected as the cemetery. A pit of only a yard or so in diameter was sunk, sometimes vertically, sometimes at an angle, or sometimes it varied from vertical to inclined. It was sunk to depths varying from 15 to 60 feet, and at the bottom a chamber was formed in the earth. Here the dead was deposited, with his arms, tools, cooking utensils, ornaments, and chattels generally, with maize and fermented liquor made of maize.

The chamber and passage were then rammed tightly full of earth, and sometimes it would appear that peculiar earth, other than that excavated on the spot, was used. One not unfrequently detects a peculiar aromatic smell in the earth, and fragments of charcoal are always found mixed with it in more or less quantity.

The "guaca" hunter takes particular note of these signs, for sometimes, strangely enough, a shaft will be found to lead nowhere—in fact, it is a sham grave, and what may have been the Indian's object in making such, no one knows.

The "guaca" hunters profess to know in what districts the graves open to the setting or to the rising sun, and on which

side of the body the treasure is to be found; but "guaca" hunters, though admirable men in their way, have a good many trade secrets.

It may be of interest that I should mention that in Colombia any one has the right by law of excavating Indian graves. If any damage is done to the land the owner is only entitled to a just compensation.

The only difference to be noticed in these graves is in their depth, or in the care with which the sepulchral chamber is arranged, and this evidently depended upon the rank of the person buried. If the old chroniclers are to be believed, the Indians were buried with absolutely *all* their belongings. So that in some instances a rich chief's grave contains quite a fortune. I have known cases of graves containing gold ornaments to the amount of £4,000, £8,000, and £13,000 respectively.

Although metal implements were used by the people under the dominion of the Incas, and by the Central American Indians, yet the tribes who inhabited the States of Cauca and Antioquia used only stone.

I have seen only two articles (an arrow-head and a spear-head) made of chipped silex, but this is explained by the fact that flint is very scarce in Colombia. Still it is strange that the Indians should not have made some use of copper, as it is found native in considerable quantities in many places. They knew how to melt it, and they alloyed it with gold. Yet gold fish-hooks are found in the graves, and are often washed out of the sands of the rivers, but no copper articles are met with.

I do not mean to say that one or two specimens may not be discovered every now and then, but they were probably articles brought from other regions. In the same way a polished mirror of pyrites has been found here and there, but such articles were probably brought from Peru.

But *the* material which the Indians used for their tools was stone. The volcanic rocks of the country furnished stones of suitable hardness, and the mountain torrents provided the pebbles already worn down into shapes which diminished the labour of fashioning them into implements.

Hatchets, adzes, chisels, hammers, and such-like implements of all sizes are found, and as a rule they are beautifully fashioned and ground.

I have found rough tools for digging and picking in the mines, which were more or less natural fragments of rock or pebbles sharpened at one end. But such examples are rare.

The great hardness of some of the rocks of which the Indians made these tools would render the manufacture a very tedious matter, if only ordinary means were employed.

But I have little doubt that massive corundum, which is found in the country, was very generally used.

The Indians in the Murri valley, on the Abrato, still bring stones of corundum to sell to the farmers for sharpening bill-hooks, &c., and so highly are these stones esteemed that as much as twenty shillings or twenty-five shillings is given for a stone having a smooth face of 3 or 4 inches square.

No doubt the Indians had their famed stone cutlers, as we have our Rogers and our Mappins, and these tools must have been one of their principal articles of commerce. Tribes living in districts where nothing but schistose rocks existed would naturally have to purchase their greenstone and basalt implements from other tribes, and these again would trade in the corundum stones for grinding down the tools. Some of these tools are very nicely shaped. I have seen a collection taken from a goldsmith's grave—chisels, polishing tools, &c.—with the streaks of gold still adhering to them, and they were beautifully made.

The class of pottery found in the Indian graves varies very little. Near Manizales, in the State of Antioquia, there appears to have been a tribe more advanced than the rest, and some of their pottery is very good. Jars, pans, dishes, and pots were generally made in imitation, more or less strict, of the human form, or of frogs, lizards, fruit, &c. Some are rougher than others, but all have the same character. Some of the ware is roughly glazed, and globules of glass have been found in tombs.

Sir Joseph D. Hooker has a ring of gold in the shape of a lizard, with green enamel on the body, which was found in a tomb in the north-east of Antioquia.

It may well be supposed that the goldsmiths and potters would by chance produce glass and enamels from time to time in their operations, and would try to turn their discoveries to account, but would not be able to manufacture any quantity.

The Manizales pottery already mentioned is generally painted in black, red, and white. Musical instruments, something like the ocarina, made of pottery, occur; and also whistles, but they are only found in this district. This may have been a musical people, for Cieza de Leon speaks of their graves being surrounded with fences of bamboos, in which holes were cut in such manner that when the wind blew they emitted a lugubrious sound. Evidently these Indians were Eolian organists, besides being accomplished cannibals.

The pottery found in the State of Cauca does not differ from that which is found in Antioquia. Whether finely or roughly shaped it is all of excellent material, and its preparation must have cost a great deal of time and labour.

Of the tribes inhabiting the State of Cauca, we have but little record. The splendid valley through which the river runs was peopled by races living in the indolence which a tropical climate and a fertile soil induce. They were a prey to the attacks of the hardier and barbarous tribes who lived in the mountains on either hand,—tribes who gave an infinite amount of trouble to the Spanish conquerors, long after they had subdued and overrun the valleys. The only tribe which seems to have had a claim to be called a nation was that which occupied the temperate region round Popayan. Their graves are rich in pottery and gold ornaments very finely made, and I know of an instance in which a statue carved in basalt, representing an Indian, was found in a grave which was evidently that of a Cacique, or Chief. The few remains of these Indians now to be found between Popayan and the frontier of the Ecuador, are simply degenerate Indians. Nothing can be deduced from their type or habits. Those who live in the cold and sterile regions of the Andes are stunted and disproportioned, and as they are all more or less civilised—that is to say, brought under civilised rule—their habits do not represent those of their ancestors. If anything is to be learned respecting these peoples it will be from their graves, for the present descendants of the aborigines are entirely degenerate.

In the valley of the San Juan river there are two Indian tribes called Noánama and Tadó. They are but few in number, and although apparently they have not mixed with the Spaniards or negroes, yet I do not think they represent fairly their original type. Being so few they must intermarry very closely, and hence they degenerate.

The two tribes live close together, and yet speak different languages, of which I append a very scanty vocabulary. The want of a plural and the very imperfect way of counting show how low in the scale of civilisation these Indians are. They are not so ugly as those who inhabit the estuaries and rivers on the coast between Buenaventura and Tumaco. These latter trade a great deal with the ports on the sea coast, and collect caoutchouc and ivory nuts, but they are a very dirty and barbarous people in spite of this. In their intercourse with their women they behave more like animals (or perhaps worse) than human beings.

As I have said before, the few Indians round Popayan and Pasto are too much altered in character and habits to be worth notice. To find Indian tribes *au naturel* it is necessary to cross the Andes and descend into the valleys of the head waters of the Amazon. But in the district of which I am treating there are none.

I have, however, omitted to mention a small remnant allied

to the Tadó Indians, who live in the mountains to the east of Novita. But they, too, are semi-civilised, and, in fact, must have been as long under Spanish influences as any, for the town of Auserina is one of the oldest in Colombia.

Throughout the whole of this great country I know of no vestiges of buildings nor of any monuments left by the millions who once lived here. I say millions, for it may be safely reckoned that the population of the Cauca and Antioquia was not less than 2,000,000, and was more likely 3,000,000. We hear of 10,000 fighting men going out with the Spaniards from a little district like Pácora to make war upon their neighbours. Thousands upon thousands were *used up*, as the Spaniards said, by Belalcázar, in his march from Pasto to Popayan. And this want of anything which could hand down their memory to posterity is significantly characteristic of these races, and points to the conclusions respecting their derivation which I mentioned at the commencement of this paper. Near Titiribe, in the State of Antioquia, there is a group of large stones having circles—some single, and some concentric—some with a dot in the centre, and some without—sculptured upon them. But it is not possible to connect these with the tribes of whom we have any historical record. It seems more likely that they were carved by another race, as I think that similar emblems are found in other parts of America.

In the same way I should conjecture that a few pieces of pottery, and one gold ornament of which I have knowledge, which were stamped with some characters looking like writing, may have been stray objects obtained by these Indians from other people. There is no picture writing, even upon their pottery, nor do their ornaments show anything of the kind.

In the valley of the river La Plata, a tributary of the Magdalena, there are some grand colossal stone statues, with symbolical emblems, and of these we shall no doubt some day have a description from the pen of the distinguished traveller, Dr. Alfons Stübel. But these do not belong to the district of which I am speaking, and I only mention them to leave them on record.

The Indians would take advantage of local products, and round Popayan a considerable quantity of knives, &c., made of obsidian, are found. Dr. Stübel and myself traced the obsidian, and persuaded ourselves that it had been ejected by the Puracé volcano. At first sight it looked as if these Indians had obtained such implements from Guatemala and Central America, where they are common, but it seemed clear that they were made on the spot.

Although the Indians had an extensive knowledge of the uses

of medicinal plants, and possess even now secrets which we may envy them, yet they were and are very helpless when attacked by diseases unfamiliar to them. They fall back in such cases upon charms, and so forth. Thus the importation of small-pox by the Spaniards, and the spread of certain diseases after the conquest, were fatal circumstances for the Indian population. They were carried off by these diseases in thousands, and even now they will make no effort to guard against small-pox.

Of their arrow-poisons so much has been written that I will not speak of them more than to mention that whilst the Indians of the interior use a vegetable poison, principally composed of an extract of a plant of the strychnos family, those of the Pacific coast employ an animal poison. It is prepared from the secretion which exudes from the skin of a small frog. My impression is that it is not *per se* poisonous as it leaves the frog, but that in the process of manufacture a certain amount of decomposition is brought about, and this converts it into a violent blood poison.

Historians say that when a tribe was preparing poison in time of war, its efficacy was tried upon the old women of the tribe. I understand that a strong peace party flourished amongst the old women.

One of the most remarkable poisons I have ever seen is that with which some of the Indians in the State of Antioquia used to poison the salt springs, and so deprive the Spanish invaders of this necessary. They appear to have covered the salt spring with twigs and boughs of a tree now known as "Doncel," which is not the "Manzanillo," the better known upas-tree of South America. Then they covered the spring up with a dam of earth and clay, which was generally kept in its place by palisades and wattle-work. Of course the water of the spring would percolate through these coverings, and it became excessively poisonous. Now the remarkable thing is, that after a lapse of three hundred years this vegetable matter still retains its venomous properties, so much so that it is a work of difficulty to free a spring from them when once the surrounding soil has become saturated with the poison.

Such springs are carefully fenced round, but sometimes animals manage to get at the water, and I have seen three horses killed in one night from drinking at one of these poisoned springs.

The Indians of the central and southern part of the Cauca were, and still are, much addicted to chewing "Coca," but the custom does not seem to have prevailed amongst the natives of the coast or of Antioquia.

The gold ornaments found in the tombs show that the Indians

were acquainted with many ways of working gold. They melted it and cast it well, and I have seen a figure representing a Spaniard in full armour, with visor down, through the bars of which the moustached and bearded face could be seen. The mould for such a casting would be no easy thing to make.

Many ornaments are made of beaten or drawn gold. Some are partly cast and partly hammered work, and these are soldered together with gold solder.

There is a popular idea amongst the Colombians that the Indians possessed some secret for softening gold and rendering it plastic, and certainly finger-marks are to be seen upon some of the gold work. But there is no doubt that such marks are really the copies of the impressions of fingers in the clay mould in which the object was cast.

In Popayan I saw, in 1867, a winged human-headed figure about 6 inches in height, made of copper, thickly gilt. I could not determine how the gilding was done, and I have never been able to obtain any proof that the Indians were acquainted with the use of mercury for gilding.

Rich mines of quicksilver and of silver existed in the country, and some few ornaments of the latter metal are found in the Indian graves, but no extensive use was made of the metal. The Indians must have pointed out the silver mines to the Spaniards, for many rich mines were extensively worked a short time after the conquest. It is not likely that the Spaniards would have discovered these mines by themselves.

I very much regret not being able to present a more practical paper. I once obtained in the La Plata Valley a fine Indian skull, one with a huge, artificially-flattened forehead.

I packed it carefully in a bag with moss, and hired a man to carry it about twenty miles, as I could not put it in my luggage without crushing it. That man did what we often do in an evil hour: he took a short cut by a footpath, and in one place the cut was too short, for he fell down a precipice and smashed the skull to atoms, which he threw away.

A few hints respecting what may be done in the country, and the best places to visit, may be useful. A trip to Colombia costs no great sum of money, and may be made with comparative ease and comfort.

Generally speaking, Indian remains may be found everywhere, but the Frontino and Dabeiba districts, where the tumulus-builders lived, would be found of great interest, and unopened graves would be met with.

To the east-north-east of the State of Antioquio, near Yolombo, there is a district which I believe to be virgin. A great Indian road ran through it, and I have seen abundant indications of

great burial-places, and of villages along it. The road probably connected the country of the Chibchas with the Darien district, and in this part it lay out of the route of the Spanish explorers. By the time the country was settled, the forest had asserted its old dominion in the less frequented parts, and hence I think that the Spaniards did not rifle the graves in the district I am speaking of.

It would be quite possible even yet to obtain vocabularies of as many as ten Indian tribes, and they would be the more interesting inasmuch as these races are disappearing so fast. It is no easy task to draw out an Indian. If he is too civilised, too much used to speaking Spanish, he will mislead by not giving the true Indian expressions. If, on the other hand, he is used to speak only his own language, and knows little Spanish, he will not answer rightly the questions put to him. After getting a lot of answers jotted down, one finds that the Indian has been repeating the questions put to him, or when it was wished to have an interrogation translated, he has answered it.

It is by no means improbable that these peoples preserve traditions of their ancestors, but it is difficult to acquire sufficient familiarity with them and with their language to find out much in this direction. Their reticence, however, is natural, and does not depend on any special aversion which they have to telling what they may know. They do not respect the bones of their ancestors, and willingly help to search the old cemeteries.

The Titiribi district, where the stones, with circles, &c., carved on them, exist, would be found interesting. On many of the hill-sides where the forest has been cleared away, one may see, when the sun is going down and the shadows are distinct, the sites of hundreds of Indian dwellings, marked by a little terrace to each one. There were rich gold mines and large salt springs in the neighbourhood, and I think that an important tribe must have lived here.

The Indians who practise cremation lived, as I have mentioned, in the valley of Aburra, now the valley of Medellin, and, as they were poor, their graves have been left undisturbed. Most interesting researches might be made here at a very small cost.

It may interest the Institute to know that Dr. Manuel Uribe Arango, Dr. Andres Posada Arango, and Senor Leocadio M. Arango, who all reside in Medellin, have taken considerable interest in the study of the Indian tribes, and possess a great deal of information respecting them.

APPENDIX.

Vocabulary of Words used by the Noánama and Tadó Indians.

Compiled by R. B. WHITE, Esq.

	Noánama Indians. ¹	Tadó Indians. ¹
Water	Du	Panéa.
Fire	Igdñ	Tibúa.
Wind	Foo	Nawiá.
Sun	Edaú	Pesia.
Moon	Edau	Jedego.
Star	Idaga	—
Day	Edeu	Astaura.
Night (it is)	Kiwadin	Tinsa.
Man	Emokoyda	Oomoojina.
Woman	Uida	Ooena.
Father	Fade	Tate.
Mother	Ade	Nauné.
Brother	Infu	Ua.
Sister	Infui	Umpima.
Son.. ..	Chaida	Uwar.
Daughter	Chaida uida ²	Uwar ooena ² .
My wife (woman)	Mu uida	Mu ooena.
Youth .. ..	.. ..	Choudra.
Hair	Pumbú	Púra.
Head	Púdu	Parú.
Nose	Keun	Kung.
Eye	Daú	Taú.
Eyes	Daudú	Tau umé.
Tooth	Hierra	Kidá.
Molar .. ..	.. ..	Kidamona.
Tongue	Meujins	Kinóma.
Ear	Cachi	Káru.
Ears	Cachi nú	Kuru umé.
Mouth	I	Itaí.
Breast .. ..	.. ..	Troá.
Throat .. ..	.. ..	Ostaú.
Hand	Hua	Huá.
Hands	Hua nu	Hua umé.
Arm	Piu	Hua folo.
Arms	Piu nú	Hua folo umé.
Leg.. ..	Dada	Jinú.
Foot	Bopidi	Jinugá.
Finger	Huachaje.. ..	Huniruma (?).
Nail .. ..	.. ..	Bisi.
Egg	Neman	—
Leaf	Hede (hard e).	—
Belly .. ..	.. ..	Bí.
Snake	Nemooóni	Tama (tama chi = little snake).
Big snake .. ..	.. ..	Tamaguaiþúa.

¹ The Indian words are written according to the Spanish pronunciation.² Woman.

	Noánama Indians. ¹	Tadó Indians. ¹
Pot.. ..	Dúpi	Kurú.
Hill.. ..	Dura	Ijá.
Tree	Paá	Pajurú.
Flower	Nefu	Tatemú.
Fruit	Neta	—
Flowers	Nefu-chojara	—
Fruits	Neta-chojara	—
Maize	Peden	Pechajé.
Plantain	Tachi	Namco-pana (plural?),
Ripe plantain	Chivara	Páta.
Cassava	Yuja	Boquierra.
Serpent	Neucoconi	Tama.
Caocho (indiarubber) .. ..	.. ..	Pondú.
Jaguar	Imamá	Cuma.
Frog	Echumia	Basí.
Fish	Surma	Kiwú.
Barbudo (bearded fish)	Beta	—
Vulture	Acosa	Ajosó.
Gourd .. ..	.. ..	Saurig.
Cock	Atjarrba	Eter.
Hen	Atjarrhui	Eterée.
Dog.. ..	Usá	Sáaqui.
Dogs	Usa chojara (many)	Nemsaquapani,
Parrot	Bathuba	Cáí.
Parrots	Bathuba chojara (many)	Nemsaipana.
Road	Kiudá (d = th).	—
Canoe	Japa	Ampa.
Bird	Catarmica	Curdirma.
Birds	Catarmica chojara	—
Forest	Cirna	—
Sun-god .. ..	.. ..	Peesa.
Gold	Pinú	Né.
Silver	Patjoua	Parata.
Soul	Acára	Necú.
Sleep	Nebdafuga	Tajujes.
Shadow	Cucumami	Tiensi.
Death	Towadin (t = th)	Piurrá.
God	Aya	Acuné.
Fever	Quichidun	Kiirua.
Medicine	Bení	Neána.
Doctor	Ben juna	Nearetaduasé.
Policeman	Acurnum	—
Centipede	Huitmia	—
House	Di.. ..	Teé.
Small house .. ..	.. ..	Tee chagé.
Big house .. ..	.. ..	Tecuma.
Tomb	Bipamum	—
Ascent	Maraga	—
Descent	Badga	—
Palm	Choorra	—
" (milperos)	Socarrho	—
Good	Ojafam	Pia.
Bad	Jonim	Andunumba.
Hat	Pia	—

¹ The Indian words are written according to the Spanish pronunciation.

	Noánama Indiana. ¹	Tadó Indians. ¹
Good water	Dujafam	Panea pia.
Dirty water	Dunjanathun	Panea pachirã.
New	Chiwil.	
Old	Chijuirã	Chinã.
Bad	Jinú	Cachirubri.
Big.. ..	Limpurna	Guaibua.
Little	Banachirimi	Mã äri.
I am	Mã.	—
Thou	Bã.	—
My brother is bigger than yours	Enfuhimpumithim	Uampuma-uai ba bã.
My house is the biggest ..	.. ..	{ Mutee di i them di puma. The dui thi um.
I go to the house .. ..	.. ..	{ Mutee dia wei. Mea wei cuma tea.
It is hot .. ..	.. ..	Nempechega.
The water is cold.. ..	.. ..	Panea cunasa.
The water is hot .. ..	.. ..	Panea nuasii.
Knife .. ..	.. ..	Tuthuf.
White .. ..	.. ..	Cafunã.
Black .. ..	.. ..	Neorro.
Red .. ..	.. ..	Purea.
Ugly nigger .. ..	.. ..	{ Neorromestoma. Wenamestoma.
Come here.. ..	.. ..	Usigaga (<i>g</i> soft).
Is there water? .. ..	.. ..	Panea parã?
There is none .. ..	.. ..	We bë.
Who knows? .. ..	.. ..	Sa wai tá?
Don't know .. ..	.. ..	Ma jui ta nine.
Lie.. ..	.. ..	Chisewã.
I eat .. ..	.. ..	Munajuiduai.
Thou eatest .. ..	.. ..	Muche binejui.
He eats .. ..	.. ..	Echetua banejui.
We eat .. ..	.. ..	Nejudéinoude.
Take, carry .. ..	.. ..	Ethaalhi.
It is going to rain .. ..	.. ..	Cuejehii.
I thirst .. ..	.. ..	Ubichigã.
I hunger .. ..	.. ..	Hãsogã.
Adieu .. ..	.. ..	Café.
Thanks .. ..	.. ..	Euchidã.
Take care (look out) .. ..	.. ..	Owã.
Plural (many)	Chojara	Nem..... pani.

Numbers.

1	Aba	Aba.
2	Nu	Umé.
3	Tanjupa	Kimaria.
4	Jayupa	Guasuma.
5	Juambo	Kisona.

¹ The Indian words are written according to the Spanish pronunciation.

DISCUSSION.

Mr. HYDE CLARKE observed that many points of interest were to be noticed in this paper. Among these was the reference to the water-gods. With reference to the ancient Chibcha kingdom it was to be noticed that there were lake legends resembling those of Lake Fucino, in Italy, and the lakes in West Africa. The Indians believe that voices are heard from the lakes. In ancient times the chief cacique once a year, attended by the caciques, pushed off on a raft to the centre of the lake, and made offerings of gold images. Hence it had been proposed to drain one of the lakes which was supposed to contain these accumulated gold treasures. The languages in the vocabularies were deserving of attention. At the same time he did not look on the number of languages and tribes in Colombia as exceptional, or as having the significance attributed to them. The normal condition was, as is seen in West Africa, an intermixture of differing languages and tribes. The reasons for these conditions cannot be those assigned by philologists and anthropologists, but require careful observation and discussion. The vocabularies, like all those from America, are not indigenous as assumed, but are fully comparable with those of the Old World.

Mr. HUNTON PRICE inquired whether the tumuli or barrows on the hill-tops were circular or oval, or if corresponding at all to the British or Saxon tumuli so familiar to us in England.

Dr. LEITNER, in offering some remarks of an ethnographical and linguistic character, arising out of the paper that had just been read, showed (1st) how the difficulty to which the lecturer had referred, of eliciting linguistic information from savages or semi-savages might be overcome by the adoption of a method which combined the observation of the questioner's immediate surroundings with a scientific purpose. Of this method Dr. Leitner gave some illustrations, instancing at the same time some amusing failures that had occurred in attempts to obtain equivalents for abstract terms or by the careless use of gestures. (2nd) As regards the counting up to five or by fives, this was the natural method, as the fingers of one and then of both hands were the first obvious means of counting. A "classical" example in point were the forms of the Latin numerals I to X. V was the figure of the out-stretched thumb and hand; X the crossed thumbs of both hands stretched out; IV and IX showing that one was taken off the V and X respectively, and so forth. Both gestures and terms for numbers above ten, with races in various parts of the world, were indicative of multitude or incalculability, as there were no more fingers to use than ten. These gestures and terms of course varied according to the habits of the people which employed them, and these habits were affected by climatic, historical, and other associations. Of this the Arabic عشر was a case in point. In Central Asia, also, the wandering Magaddo, whom he had described in a "Selection from the Records of the Panjab Government," counted only up to five, and if they wanted to say six, it was five and one, and so on up to

ten, for which a term had been coined. Still lower in the scale of humanity were the races that could not count beyond two, and whose observation had been limited to the self as number one, and to everything else outside the self as number two, without any further subdivision. (3rd) As regards the degeneracy of tribes when they came in contact with a higher or a different form of civilisation than their own, this fact did not only apply to the savage Red Indians, but also to the cultured natives of India, whose indigenous civilisation, on which rested their moral, intellectual, and political life, was disappearing in consequence of the disintegrating processes of Anglicism.

The AUTHOR said, in reply to remarks which had made in the course of the discussion, that it would give him great pleasure to collect and send to the Institute such skulls and other relics of the aborigines as he might be able to obtain. He thought that many eminent Colombians would be ready to correspond with the Institute upon the subject of the paper, and he believed that Dr. Andres Posada Arango was a Member of the Anthropological Society of Paris. The belief in river and water-gods, to which Mr. Hyde Clarke had referred, was known to him, and existed outside the limits of the district to which the paper had reference. The Chibcha kingdom, where the Zipa was bathed in a lake after being powdered with gold dust, lay to the east of the Central Cordillera. The mine-workings certainly were of great interest, and he (Mr. White) had brought over from Colombia quite a representative set of stone implements, some rude and some highly finished, which the Indians used in the mines. These specimens were in the Christy collection. The mounds made by the Indians of the Dabeiba and Frontino district were circular, and were not like our barrows. In forming the vocabulary of Indian languages Mr. White made use of a system of interrogation given to him by Professor Bastian, of Berlin, very similar to that recommended by Dr. Leitner, but in spite of this there was always a great deal of difficulty in obtaining correct answers.

The following paper was then read by the author :—

*On the RELATIVE LENGTH of the FIRST THREE TOES of the
HUMAN FOOT.*

By J. PARK HARRISON, M.A.

IN a paper which I communicated to the Anthropological Department of the British Association at Southampton last year, I mentioned that a careful examination of the unrestored feet of Greek and Roman statues in various museums and galleries had led to the conviction that it was from Italy, and not Greece,

that the long second toe affected by many English artists had been imported into this country.

As a fact, very few feet of statues executed in Greece itself exhibit the peculiarity, whilst in Italy, at the earliest period of Etruscan art, the foot is, as a rule, so represented. The suspicion consequently at once arose that a long second toe might prove to be racial, and so account for the proportions which the feature attained in the works of Raphael,¹ and other great Italian masters, natives, possibly, of the districts in which the peculiar form of foot was most prevalent. Supposing a long toe to be racial, it would have appeared perfectly normal in their eyes, and inseparable from the forms adopted as their models.

That a long second toe is racial in Italy, though it may not characterise the Italians generally, has during the last year been more or less established by some observations made by a competent observer, at my request, in Tuscany, where both sculptors and painters represent the second toe as excessively long. Both at Florence, and the district between that city and Aosta, the peculiarity is said to be conspicuous in the barefooted inhabitants; and I am informed that it occurs in the feet of some of the Italian models employed at the Royal Academy of Arts, and in artists' private studios.

In order to ascertain whether the descendants of any of the races that form the population of the British Isles exhibited the peculiarity, an examination was made at Glasgow, in 1876, of the feet of a large number of Scotch and Irish children, principally boys, between nine and thirteen years of age, who were then running about the streets of the city unshod. The result showed that the great toe was in all cases the longest; and the second never shorter than the third. The feet of several hundred children in Perthshire were also examined a few years later by Professor Flower, and not a single instance was met with of a short great toe.² Similar results were obtained from observations made by myself at different times of children's feet in Dublin and the Irish quarters in London.

As opportunity offered, measurements were also procured of the feet of sailors, and other adult males in various country districts in the United Kingdom, and with few exceptions, and those almost exclusively in England, the great toe proved to be the longest. In no instance was the third or middle toe found to be longer than the second.³

¹ See, for example, the sketches of feet in the Raphael Room at the British Museum; and compare them with the feet of the Chioserul Apollo, and the untouched cast of the only perfect foot of the Venus of Milos.

² "Fashion in Deformity," p. 6 (note).

³ The details of the measurements referred to in the text were unfortunately lost in a railway train.

Having heard that Sir James Paget had noticed, in the course of his extensive practice, that a long second toe was not uncommon, on my applying for information on the subject he obligingly undertook to make special observations for a month, and at the termination of that period furnished me with measurements of the feet of fifty persons, twenty-seven male and twenty-three female.¹ In the case of the males, twenty-four out of the twenty-seven had the first or great toe longer than (*i.e.*, projecting beyond) the second; and in one case it was shorter than the second in the right foot, whilst in the left the first and second toes were of equal projection. In the remainder the difference was much the same in both feet.

In five instances the excess in the projection of the first or great toe beyond the second was about $\frac{1}{4}$ inch; and in one instance, a subject from Yorkshire, the excess was $\frac{1}{2}$ inch—in proportion, apparently, to the stature, *viz.*, 6 feet 2 inches. The other five subjects were described as well formed, and two of them as tall. The minimum projection of the great toe was $\frac{1}{16}$ inch, and it occurred in the case of two children and three adults, two of whom were tall. In the foot of a Jew the first or great toe was $\frac{1}{8}$ inch longer than the second.

In the three instances in which the great toes were shorter than the second toes, one subject, aged nineteen, is described as tall, thin, and weakly; one, twenty-one years old, as well formed and athletic; and one, forty-six years old, as short and stout. In the first and last cases the deficiency was $\frac{1}{16}$ inch, and in the second $\frac{1}{8}$ inch.

There were six instances in which the second toe exceeded in length the third toe by $\frac{1}{4}$ inch; in two instances the difference was $\frac{1}{12}$ inch; and in one instance the second and third toes were of equal length.

No instance occurred of a third toe that was longer than the second.

In the case of the female feet, in ten out of twenty-three subjects the first or great toe was longest, and in ten females it was shorter than the second toe. In the remaining three instances the first and second toes were of equal length. On tabulating the observations, however, according to age (see Tables I and II), by far the greater number of longer second toes were found to belong to women above thirty years of age. The maximum excess in the second toe was $\frac{1}{4}$ inch, in a subject aged forty-five, described as tall and well formed. In two instances the second toe exceeded the first in length by $\frac{1}{4}$ inch;

¹ They were eye-measurements, but Sir J. Paget informs me they may be relied on as correctly estimated.

both subjects, aged eighteen and fifty-one respectively, were well formed, and one of them tall. In five subjects the excess in length of the second toe over the first was $\frac{1}{8}$ inch.

The maximum excess in length of the great toe was $\frac{1}{8}$ inch, and it occurred in the case of two subjects, both of whom are described as tall and well formed. The minimum excess was $\frac{1}{16}$ inch, and it occurred in three instances; two of the subjects were tall and well formed.

There were two instances in which the second toe exceeded the third toe in length by $\frac{1}{4}$ inch, and one instance in which the excess was $\frac{1}{8}$ inch. The subjects were tall. The minimum excess in projection of the second toe over the third in adults was $\frac{1}{16}$ inch, and it occurred in three cases.

Two of the subjects with longer great toes were of Greek origin.

TABLE I.

MALE FEET.

Age.	Great toe longest.	Great toe shorter than second.	Second toe longer than third.	Observations.
Years.	inch.	inch.	inch.	
2	$\frac{1}{16}$	..	$\frac{1}{16}$	Well formed.
3	$\frac{1}{8}$	..	$\frac{1}{8}$	Slight; rickety.
9	$\frac{1}{16}$	..	$\frac{1}{16}$	Small and feeble.
12	$\frac{1}{8}$	..	$\frac{1}{8}$	From Yorkshire; good foot.
14	$\frac{1}{8}$	..	$\frac{1}{8}$	Rather flat and long feet.
14	$\frac{1}{8}$	..	$\frac{1}{16}$	Well formed.
19	..	$\frac{1}{16}$	$\frac{1}{8}$	Tall; thin; weakly.
21	..	$\frac{1}{8}$	$\frac{1}{8}$	Well formed; athletic.
25	$\frac{1}{8}$	..	$\frac{1}{8}$	Tall; thin.
26	$\frac{1}{8}$	..	$\frac{1}{8}$	{ 6 ft. 2 in.; strong; from Yorkshire.
28	$\frac{1}{8}$	..	$\frac{1}{8}$	Tall; well formed.
30	$\frac{1}{8}$	..	$\frac{1}{8}$	Well made.
40	$\frac{1}{8}$	..	$\frac{1}{8}$	
43	$\frac{1}{8}$	..	$\frac{1}{8}$	Well formed.
46	..	$\frac{1}{8}$	$\frac{1}{8}$	Short; stout.
48	$\frac{1}{16}$	..	—	Average size.
49	$\frac{1}{8}$	..	$\frac{1}{8}$	Tall; well formed.
50	$\frac{1}{16}$	..	$\frac{1}{16}$	Tall; well formed.
53	$\frac{1}{8}$	..	$\frac{1}{8}$	Jew; well formed.
54	$\frac{1}{8}$	..	$\frac{1}{8}$	Well formed.
55	$\frac{1}{8}$	..	$\frac{1}{8}$	Tall; well formed.
60	$\frac{1}{16}$	..	$\frac{1}{8}$	Tall; well formed.
61	$\frac{1}{8}$	..	$\frac{1}{8}$	Tall; well formed.
65	$\frac{1}{8}$	..	$\frac{1}{8}$	Well formed.
69	$\frac{1}{8}$	..	$\frac{1}{16}$	Tall; thin.
70	$\frac{1}{8}$	..	$\frac{1}{8}$	Well formed.
80	$\frac{1}{8}$	..	$\frac{1}{8}$	6 ft.; good foot; toes parallel.

TABLE II.—FEMALE FEET.

Age.	Great toe longer than second.	Great toe shorter than second.	Second toe longer than third.	Observations.
Years.	inch.	inch.	inch.	
4	$\frac{1}{2}$	..	$\frac{1}{15}$	Slight; rickety.
4	..	$\frac{1}{15}$	$\frac{1}{15}$	Left foot; right deformed.
16	$\frac{1}{2}$	..	—	Tall; well formed.
17	$\frac{1}{2}$	..	$\frac{1}{2}$	Greek; thin.
18	..	$\frac{1}{2}$	$\frac{1}{2}$	Well formed.
20	$\frac{1}{2}$	..	$\frac{1}{15}$	Half Greek.
24	$\frac{1}{2}$	..	$\frac{1}{2}$	Irish; 6 ft.
24	$\frac{1}{2}$	..	$\frac{1}{2}$	Well formed.
30	..	$\frac{1}{2}$	—	Well formed.
30	—	—	$\frac{1}{15}$	
35	—	—	$\frac{1}{2}$	Well formed.
36	..	$\frac{1}{2}$	$\frac{1}{2}$	Well formed.
45	..	$\frac{1}{2}$	$\frac{1}{2}$	Tall; well formed.
48	..	$\frac{1}{2}$	$\frac{1}{2}$	Tall; stout.
50	$\frac{1}{2}$	..	$\frac{1}{15}$	Tall; well formed.
51	..	$\frac{1}{2}$	$\frac{1}{2}$	Tall; well formed.
52	$\frac{1}{15}$	..	—	Well formed.
53	..	$\frac{1}{2}$	$\frac{1}{2}$	Well formed.
54	..	$\frac{1}{2}$	$\frac{1}{2}$	Short; stout.
54	—	—	$\frac{1}{2}$	Tall; well formed.
54	$\frac{1}{2}$	..	$\frac{1}{2}$	Welsh; tall; robust.
63	..	$\frac{1}{2}$	$\frac{1}{2}$	
67	$\frac{1}{2}$	..	$\frac{1}{15}$	Tall; well formed.

The sign — implies that the lengths of the first and second toes, or of the second and third, are equal.

Sir James Paget forwarded, with his own observations, some results obtained in the suburbs of London by Mr. E. G. Gilbert, M.R.C.S., mainly from measurements taken under his directions. Of 164 persons, of both sexes and of all ages, 115 were found to have the first or great toe longer than the second, and in eight cases the first and second were of equal length. In forty cases the second toe was reported to be longer than the great toe; and in one case the great toe was longer than the second in one foot, and shorter in the other. In every instance where the feet of more than one member of the same family were examined, Mr. Gilbert says, they were found to be of the same form. In one group or set of observations, the number of instances in which the first toe was shorter than the second was reported to be considerably greater in females than in males.

Mr. Gilbert has since procured further information regarding the latter observations.

The female subjects alluded to were pupils in a training college for school teachers, and on a careful examination of the feet of those in residence, who were returned on the previous

occasion as having a short great toe, or have been found to possess it on subsequently joining the college, Mr. Gilbert has ascertained that there are six whose second toe is longer than the first, and three whose first and second toes are of equal length, out of a total of thirty-three. There is also one student with the second toe longest out of a total of twenty-one male pupils. The difference was not more than $\frac{1}{8}$ inch in any instance.

Owing to the fact that the parents of the students were mostly either Londoners or inhabitants of large towns, their racial origin could not be ascertained with any certainty, though Mr. Gilbert took notes which it was hoped might assist in doing so. In three cases, however, there appears to have been a very close resemblance between the subjects: the hair is described as dark; the eyes hazel; the nose not arched, the lips full. The average stature did not exceed 5 feet $1\frac{1}{2}$ inches. One was a native of the Isle of Wight. The parents of the other two belonged to Sheffield, Westbury, and London. In these three cases the first and second toes were of equal length. With the exception of the female student, who belonged to Sheffield, all the pupils with longer second toes were born in southern towns; and none of them exhibited any Celtic characteristics.

The occurrence of a long second toe in the higher and upper middle classes, at an age when it might be expected that the continued use of narrow and straight-soled shoes would cause a chronic eversion of the great toe, might perhaps have sufficiently accounted for some of the cases of a shorter great toe in Table II, had the numbers been sufficient to justify the induction. "Rights and lefts," which it appears were not invented much before the middle of the century, prevent much eversion of the great toe in male feet; but they are not, it is believed, made use of by women, except in a shape that is little efficacious.

To ascertain whether the feet of Scotch women exhibited any change in form after thirty, application was made to Professor Struthers, of Aberdeen, for information on the subject, when he at once sent me ten observations, in nine of which the great toe proved to be longest. The following are the ages, and the projections of the toes alluded to:—

Age.					Great toe longest.
25 years	..	..	..	..	$\frac{1}{8}$ inch.
41	"	..	..	..	$\frac{1}{8}$ "
51	"	..	..	..	$\frac{1}{8}$ "
59	"	..	..	..	$\frac{1}{8}$ "
65	"	..	..	..	$\frac{1}{8}$ "
71	"	..	..	..	$\frac{1}{8}$ "
72	"	..	..	..	$\frac{1}{8}$ "
84	"	..	..	..	$\frac{1}{8}$ "
					Great toe shorter than second toe.
63	"	..	..	..	$\frac{1}{8}$ inch.

In this last case, Professor Struthers measured the projection of the third toe as well as the first and second, when it was found to be $\frac{1}{8}$ inch shorter than the second.¹ This, and some other cases of the same kind, seem to indicate that the difference in length between the first and second toes may be occasionally due to an abnormal growth of the second, and not to any defect in length of the great toe.

In connexion with the question of race or heredity, it will be pertinent to mention that Dr. Pruner found that a longer second toe characterised the feet of Alsatian women, and so, by implication, not of French women generally; and it is not so in the only two skeleton feet of French women that I have measured, one of them included in Table III.² It may prove to be a non-Celtic peculiarity, as we have seen that it is almost invariably absent in Scotch and Irish feet, and so far as is at present ascertained in the Welsh foot also.

The opportunity which was afforded by the late exhibition of twenty Zulus at Westminster was taken advantage of to examine the form of their feet. It resulted in the somewhat unexpected discovery that no tendency existed amongst them to a long second toe. There appeared, however, to be more variability in the length of toes in the two feet than occurs in the case of Europeans; and their fourth and fifth toes were well developed, not having been stunted in their growth by shoes.

In about half the subjects, the difference in the length of the first and second toes was the same in both feet. In seven instances the difference in length of the first and second toes was least in the right foot; and in three instances it was greater.

In five instances the difference in the length of the first and second toes reached or exceeded $\frac{1}{2}$ inch in favour of the first or great toe of the right foot; and in six instances it occurred in the left foot. The minimum excess in length of the great toe was $\frac{1}{8}$ inch, and it occurred in three subjects in the right foot. The minimum in the case of the left foot was $\frac{1}{8}$ inch, and it occurred twice. In one instance the two toes of the right foot were equal, whilst the difference in the left was $\frac{1}{8}$ inch in favour of the great toe.

In five instances the difference in length of the second and third toes was the same in both feet. In six instances it was as much as $\frac{1}{8}$ inch in favour of the second over the third, in the case

¹ Some measurements of skeleton feet in the Anatomical Museum at Aberdeen were forwarded with these measurements; and the first toe in two female feet, presumably Scotch, as the preparations were made at Aberdeen, was in each case longer than the second (see Table IV).

² In the Natural History Museum at Oxford there are two French skeletons, in the smaller of which, apparently female, the second toe is considerably longer than the first; but the second phalanx has evidently been restored.

of the right foot, and in four instances in the left. The minimum excess of length in the second toe over the third was $\frac{1}{8}$ inch, and it occurred once in the case of the right foot, and twice in the case of the left.

From tracings made by Mr. George W. Bloxom, F.L.S. (Assistant Secretary of the Anthropological Institute), of the feet of the four Waganda envoys who visited this country three years ago, it appears that the difference in the length of their first and second toes was, in two instances, $\frac{1}{8}$ inch in favour of the first or great toe, the second toe in both cases being quite $\frac{1}{8}$ inch longer than the third, and this in both feet alike. In the other two subjects, the excess in length of the great toe was $\frac{3}{8}$ inch; the second toe was $\frac{1}{8}$ inch longer than the third in one case, and $\frac{1}{16}$ inch in the other case, and this, too, in both feet.¹

These results were also unexpected.

Dr. Pruner, in a "*Memoire sur les Nègres*," quoted by Dr. Hunt, in a note to his paper on the "Negro's Place in Nature,"² says that "it is true that the great toe of the Negro rarely rises above the second, but neither is it often shorter." But "a slight shortening of the great toe undoubtedly exists, not merely amongst the Negro tribes, but also in ancient and modern Egyptians, and even in some of the most beautiful races of Caucasian females."

The existence of a longer second toe in the Boschmen, and some tribes on the Congo, &c.,³ amongst whom it appears to be racial, is important, as possibly connecting them, and more especially the former people, with the Egyptian dark race. Professor Rolleston, it will be remembered, came to the conclusion, from craniological evidence, that the Boschmen were descended from ancestors in a high state of civilisation; and it is remarkable that their representations of cows and other animals closely resemble, in outline and colour, frescoes in Egyptian tombs.

From my own observations the feet of the Botocudo Indians were found to have the second toe shorter than the first.

Skeleton feet in various museums have been carefully examined, and in many cases found to be sufficiently well articulated to allow of measurements being taken of the projection of the phalanges; and, generally speaking, no difficulty was experienced in detecting restorations, principally from the difference in colour and substance of the bones. In England, moreover, the practice

¹ The measurements being derived from tracings of the feet, may not in all cases be reliable, but they may be taken as fairly correct.

² "*Mem. Anthropol. Soc.*," vol. i, p. 6 (note).

³ Judging from the feet of skeletons at Paris.

of mending and completing imperfect specimens is seldom resorted to, though it is common in France, and has to be specially guarded against in preparations imported from that country.

The skeleton great toes of the following savage or semi-civilised races are found to be shorter than the second toes:—Peruvians, Tahitians, New Hebrideans, Savage Islanders, Ainos, and New Caledonians—all inhabiting islands in the Pacific, or the Indian Ocean, with the exception of the Peruvians, who, however, it has long been suspected, may have reached America by sea from the West, at a date signalised by their knowledge of art: and they are thought to have left footmarks on their way. In another direction the peculiar feature appears to characterise one of the races in India.

In the following tables, the difference in excess in the projection (1) of the great toe, and (2) of the second over the first, in skeletons in the Museum of the Royal College of Surgeons, is given in tenths of an inch in the first column of fractions; and the excess in the projection of the second toe over the third is shown in the column adjoining. The skeleton feet in which first and second toes are equal in length are separately tabulated (3). The numbers in the first column are those of the skeletons in the museum. Excepting when absent or defective, the measurements of the toes of the right foot only are inserted. Where, however, the difference between them amounted to $\frac{2}{10}$ inch, the projection is given for both feet. An asterisk indicates that a phalanx is doubtful. The measurements from Aberdeen will be found in Table IV.

TABLE III.—SKELETON FEET.

(1)

No.	Sex.	First toe longest.	Inch.	Inch.
67	M.	European	$\frac{1}{10}$	$\frac{1}{10}$
69	M.	French	$\frac{1}{10}$	$\frac{1}{10}$
70	F.	French	$\frac{1}{10}$	$\frac{1}{10}$
71	M.	English	$\frac{1}{10}$	$\frac{1}{10}$
223	M.	Irish (O'Brien).. ..	$\frac{1}{10}$	$\frac{1}{10}$
224	M.	Anglo-American	$\frac{1}{10}$	$\frac{1}{10}$
1043	F.	Australian	$\frac{1}{10}$	$\frac{1}{10}$
1068 ₁	M.	Australian	$\frac{1}{10}$	$\frac{1}{10}$
1096	M.	Tasmanian	$\frac{1}{10}$	$\frac{1}{10}$
2288	F.	Negress	$\frac{1}{10}$	$\frac{1}{10}$
1398	F.	Negress	$\frac{1}{10}$	$\frac{1}{10}$
1406	M.	Tasmanian	$\frac{1}{10}$	$\frac{1}{10}$
	M.	A detached foot	$\frac{1}{10}$	$\frac{1}{10}$
	F.	2 small feet	$\frac{1}{10}$	$\frac{1}{10}$

(2)

No.	Sex.	Second toe longest. ¹	Inch.	Inch.
54	M.	European	$\frac{1}{10}$	$\frac{2}{10}$
338	M.	European	$\frac{1}{10}$	$\left\{ \begin{array}{l} \frac{2}{10} \\ \frac{1}{10} \end{array} \right.$
582	M.	Sikh	$\frac{1}{10}$	$\frac{1}{10}$
583	M.	Egyptian	$\frac{1}{10}$	$\frac{1}{10}$
757	M.	Savage Islander	$\frac{1}{10}$	$\frac{1}{10}$
800	M.	Tahitian	$\frac{1}{10}$	$\frac{1}{10}$
847	F.	Aino	$\frac{1}{10}$	$\frac{1}{10}$
897	M.	Javanese	$\frac{1}{10}$	$\frac{1}{10}$
898	F.	Javanese	$\frac{2}{10}$	$\left\{ \begin{array}{l} \frac{2}{10} \\ \frac{1}{10} \end{array} \right.$
1014	F.	Peruvian.. ..	$\frac{1}{10}$	$\frac{1}{10}$
1278	M.	Peruvian	$\frac{1}{10}$	$\frac{1}{10}$
1239	M.	North American Indian ..	$\frac{1}{10}$	$\frac{1}{10}$
1283		Andamanese	$\frac{1}{10}$	$\frac{1}{10}$
1301	F.	Boschman	$\frac{1}{10}$	$\frac{1}{10}$
1438	M.	New Hebridean	$\left\{ \begin{array}{l} \frac{1}{10} \\ \frac{1}{10} \end{array} \right.$	$\frac{1}{10}$
1472		Andamanese	$\frac{1}{10}$	$\frac{1}{10}$
797		Bhutes	$\frac{1}{10}$	$\frac{1}{10}$

(3)

No.	Sex.	First and second toes equal.	Inch.	Inch.
684	M.	Samoyede	—	$\frac{1}{10}$
1013	F.	Peruvian	—	—
1219	M.	African.. ..	—	$\frac{2}{10}$
684	F.	Girl's foot	—	$\frac{1}{4}$

TABLE IV.

Length of Feet.	Sex.	First toe longest.	Inch.	
Inches.		<i>Aberdeen.</i>		
10 $\frac{1}{10}$	M.	Scotch	$\frac{2}{10}$	
9 $\frac{2}{10}$	M.	Scotch	$\frac{1}{10}$	
8 $\frac{1}{10}$	F.	Scotch	$\frac{1}{10}$	
Young.	F.	Scotch	$\frac{1}{10}$	
8 $\frac{2}{10}$	M.	E. Indian (Calcutta)	$\frac{1}{10}$	
Average stature } Tall.	M.	French*	$\frac{1}{10}$	
Average stature } Short.	M.	French	$\frac{1}{10}$	
	F.	French	$\frac{1}{10}$	
	F.	French	$\frac{1}{10}$	

¹ 1089 F. Australian Feet imperfectly prepared.

To facilitate the conversion of the fractions of the English inch into French measures, the following equivalents are given. It will be easy to arrive at other values by simple multiplication or division, as the case may require :—

1 inch	=	2.500 centimètres.
$\frac{1}{2}$ "	=	0.833 "
$\frac{1}{4}$ "	=	0.625 "
$\frac{1}{8}$ "	=	0.312 "
$\frac{1}{16}$ "	=	0.250 "

In the Physiological Room at the Royal College of Surgeons there are fifteen fetuses, of ages between three and six months of intra-uterine life (numbered 3666 to 3681), the feet of which are in a position to allow of eye-observation being made. Eleven have the first toe longer than the second; and in three cases the length of the first and second toes appear to be equal. In one case the second toe is longer than the first. Eight of the examples are male, and seven are female.

It should be added, that from photographs, as well as the reports of competent observers, it appears that the great toe in the Basque foot is longer than the second. This agrees with the results of measurements of several feet of the small dark Welshmen, who are supposed, with good reason, to represent the race in this country.

On the other hand, the second toe of the descendants of the Carians and Lysians of Asia Minor is reported to be longer than the first. If this should eventually be found to be so, it would be important in connection with the longer second toe of the Etruscans, who are believed to have been allied in blood with the above people.

In this and other cases further information is required; and it is hoped that travellers will record the projection of the toes of the foot for the future, amongst their other anthropological notes. In the present paper little has been done beyond ascertaining that a long second toe does not characterise the inhabitants of this country.

The result sufficiently accords with the views of Holden, who, in his "Human Osteology," states that the great toe is longer than the second; and of Professor Flower, who believes that it characterises the European foot generally. In Professor Humphry's "Human Skeleton," the first or great toe is represented as the longest; and this is also the case in two French works of authority, the first, "*Le Corps Humain*," illustrated with designs from nature by Edouard Cueur; and the other, "*L'Anatomie Artistique*," by Duval.

In Professor J. Marshall's "Anatomy for Artists," however, the accomplished author lays it down, as a rule, that the second toe

in a well-formed foot is slightly longer than the great toe, but that in a number of instances the great toe is longest. "Numerous observations," he says, seem to indicate that the conditions in which the great toe is the longest occur more frequently in persons of tall stature, or slender frame, whilst shorter or more stoutly built individuals usually have the great toe shorter than the second." Professor Marshall believes with the majority of artists that it was the practice of the Greeks so to represent it, and it seems to be generally believed that it was an ideal form derived from Egyptian art.

This, I think there is evidence to show, was not the case; although the form of toe existed in one of the early races in Egypt, and in Italy, and was copied from nature in the works of art in those countries.

As regards the art question, although this is not the occasion to enlarge upon it, it may be mentioned that a model foot, according to Flaxman, is one in which the toes follow each other imperceptibly in a graceful curve, from the first or great toe to the fifth. This does not appear to differ much from Professor Marshall's canon if rigidly interpreted. Unfortunately, however, the illustrations of the phalanges in the "*Anatomy for Artists*" represent the second toe as considerably longer than the first; and most of the casts of feet in our Art schools are derived either from Roman models or restored Greek feet, as, for example, the left foot of the Farnese Apollo, and the (Roman) copy of the Discobolus in the British Museum. In both cases the second toe of the left foot is a good deal longer than the first. In the cast of a marble foot attributed to Praxiteles, the second toe is slightly longer than the first, but it is ill-formed, and appears to have been copied from nature. It has not been taken as a guide in the restoration of the Hermes (to which it is supposed to belong) at present placed beside it. Two marble feet in one of the Parthenon cases have longer great toes.

Professor Flower has remarked that a long great toe is essentially human;¹ and certainly whenever it is conspicuously shorter than the second, and the second much longer than the third, it gives the foot an animalesque appearance.

DISCUSSION.

Mr. HILTON PRICE remarked that he was inclined to believe that the ancient Egyptians had the second toe longer than the first; it was of course well known in sculptures; but he had the foot of a mummy with the second toe longer than the first.

¹ "*Fashion in Deformity*," p. 6 (note).

NOVEMBER 13TH, 1883.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

- From EDWIN A. BARBER, Esq.—Report of the Proceedings of the Numismatic and Antiquarian Society of Philadelphia for 1882.
- Pennsylvania Museum: Catalogue of the Collection of Tobacco Pipes deposited by Edwin A. Barber.
- From Messrs. A. ASHER & Co.—Amerika's Nordwest-Küste Neneste Ergebnisse Ethnologischer Reisen.
- From the AUTHOR.—On the Development and Distribution of Primitive Locks and Keys. By Lieut.-General Pitt Rivers, F.R.S.
- Pueblo Pottery. By Edwin A. Barber.
- Antiquity of the Tobacco Pipe in Europe. II. Switzerland. By Edwin A. Barber.
- Mound Pipes. By Edwin A. Barber.
- Comparative Vocabulary of Utah Dialects. By Edwin A. Barber.
- The Opium Habit: its Successful Treatment by Avena Sativa. By Dr. E. H. M. Sell.
- La Folie Universelle et la Science Mentale, By Ivan Golovine.
- Iron from the Ohio Mounds. By F. W. Putnam.
- Über die Zeitbestimmung der Italischen und Deutschen Hausurnen. By Professor Virchow.
- Die Kupferlegirungen, ihre Darstellung und Verwendung bei den Völkern des Alterthums. By Dr. E. Reyer.
- Extraits du Bulletin du Musée Royal d'Histoire Naturelle de Belgique. By M. le Professeur Paul Albrecht.
- Mémoire sur le Basiotique. By M. le Professeur Paul Albrecht.
- Congrès International des Américanistes. Cinquième Session, Capenhague. By le Baron J. de Baye.
- Polynesian Origins. By D. Macdonald.
- Sur Quatre os Intermaxillaires. By M. le Professeur P. Albrecht.
- Sur le Crane Remarquable d'une Idiote de 21 ans. By M. le Professeur P. Albrecht.
- Das Os Intermedium Tarsi der Säugethiere. By M. le Professeur P. Albrecht.

- From the AUTHOR.—The Mounds of the Mississippi Valley, historically considered. By Lucien Carr.
- Sur la Valeur Morphologique de l'Articulation Mandibulaire. By M. le Professeur Paul Albrecht.
- Recollections of Squatting in Victoria. By Edward M. Carr.
- Eureka. By J. Wood Beilby.
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- Mémoires Couronnés et des Savants Etrangers. Tom. 44, 45.
- Mémoires Couronnés et autres Mémoires. Tom. 31, 33, 34, 35.
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— Annual Report of the Leeds Philosophical and Literary Society, 1882-3.

— Proceedings of the Society of Antiquaries. Vol. IX, No. 2.

— Zweiundzwanzigster Bericht der Oberhessischen Gesellschaft für Natur- und Heilkunde, zugleich Festschrift zur Feier des funfzig-jährigen Bestehens der Gesellschaft.

— I. Jahresbericht der Geographischen Gesellschaft zu Greifswald, 1882-3.

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From the EDITOR.—Journal of Mental Science, 1883. Nos. 90, 91.

— Nature. Nos. 713-732.

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— Revue Scientifique. Tom. XXXI, No. 26; Tom. XXXII, Nos. 1-18.

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— Revue d'Ethnographie. Tom. II, Nos. 2, 3, 4.

— The American Antiquarian. July, 1883.

— Timehri. Vol. II, No. 1.

— Bullettino di Paletnologia Italiana. Nos. 6 and 7.

— Panjab Notes and Queries. Vol. I, No. 1.

The election of the following new members was announced:

—G. B. BARRON, Esq., M.D.; D. J. CUNNINGHAM, Esq., M.D.; H. O. FORBES, Esq.; JAMES SIDNEY HUNT, Esq.; Captain EDMUND CECIL JOHNSON; R. M. MIDDLETON, jun., Esq.; Captain C. A. MOLONEY; SYDNEY B. J. SKERTCHLY, Esq., F.G.S.; JOS. SMITH, jun., Esq.; and JOHNSON SYMINGTON, Esq., M.D.

EXHIBITION OF OBJECTS *from* ANCIENT GRAVE-MOUNDS in PERU.

By JOHN E. PRICE, Esq., F.S.A.

MR. PRICE exhibited a series of objects which had been obtained from ancient grave-mounds in Peru, and explained that he was indebted for the loan of the collection to the Rev. C. I. Acland, M.A., Head Master of the Royal Grammar School, Colchester, and that it formed part of a large series of interesting relics found at Arica, in the year 1868. The discovery was due to the effects caused by the wave of an earthquake, which laid bare a

number of ancient mounds along that particular line of coast. On examination, these were seen to be sepulchres belonging to an antiquity of which no legend or history could be obtained. The objects exhibited were found on the spot by a midshipman, who remarked that had he the opportunity he might have filled his cabin instead of contenting himself with what could be removed in a box. The excellent preservation in which all were found was to be attributed to the absence of rain in Peru; they were covered in and protected by the dry sand, and would appear to be imperishable. The collection comprised objects principally to be associated with the domestic life of the ancient Peruvians; for example, specimens of pottery, pins and needles formed from the hard thorns of the *Acacia*, fish-hooks and pins of bronze, fishing lines with weights attached, leather sandals, a two-edged comb, hair and Llama wool woven into braids and tapes, a harpoon or spear with fine flint head attached, spindles and spindle-whorls, and an interesting little bag containing antimony or other metallic substance, found suspended round the neck of a female corpse; a bolas of a single stone, and an interesting example of the "quipus" or cane, wound round with coloured thread. The quipus, as described by Prescott, was a cord some 2 feet long, composed of different coloured threads lightly twisted together, from which a quantity of smaller threads were suspended in the manner of a fringe, used for recording events and the like among the ancient Peruvians and Mexicans. The threads were of different colours and tied in knots. The colours denoted sensible objects, as white for silver, yellow for gold, and sometimes also abstract ideas, as white for peace, and red for war. The quipus was used chiefly for arithmetical purposes, the knots serving as ciphers. It constituted a rude register of certain important facts or events, as of births and deaths, marriages, the number of persons qualified to bear arms, or the amount of stores in the royal magazine. The mysterious science of the quipus supplied the Peruvians with the means of communicating their ideas to one another, and of transmitting them to future generations.

Mr. Price also referred to the strange but general resemblance to be noted between many of the objects and stones familiar in Roman and Saxon burials, particularly as to the two-edged comb, the pottery and the *vorticelli*, or spindle-whorls, used by the ancients for keeping the thread of the distaff in tension. Examples of these, both of bone and earthenware, discovered in Colchester, were also exhibited.¹

¹ See description of Peruvian Pottery brought over by Consul Hutchinson from Peru, by J. E. Price ("Journ. Anthropol. Inst.," vol. iii, 1874, p. 100).

DISCUSSION.

Mr. BERDOE inquired if the coloured register exhibited was the same as the "quipus" described by Prescott, in his fourth chapter of the "Conquest of Peru," and which was said to be used by the Peruvians as means of registering births, deaths, marriages, &c.
The reply was in the affirmative.

EXHIBITION of LAMPS from the ORKNEY ISLANDS.

By J. G. GARSON, M.D.

DR. GARSON exhibited two lamps which he had procured from the Orkney Islands for the University of Oxford Museum (see fig. 4, Plate VII). They were very similar to the lamp of the Eskimo, described by Mr. E. B. Tylor in his paper read at the end of last session. Each lamp consists of two flat receptacles, prolonged into a spout-like depression on the anterior portion. To the upper and posterior edge of one of these receptacles is fixed a narrow piece of iron, into which is firmly inserted an upwardly inclined projecting rest for the upper receptacle, which has a shorter piece of iron with a slit in it attached to its posterior edge. The two receptacles are therefore placed one above the other. Into the upper one the oil is placed. The oil usually burnt is linseed or fish oil, and the cellular pith of a couple of rushes serves for wick. The sole object of the under receptacle is to receive the oil which drops from the upper one. By the inclined projecting bar being notched the pointed extremity of the upper receptacle can be elevated or depressed as required. To the upper extremity of the upright piece of iron is attached a hook by which the lamp is suspended. There is no automatic contrivance in the manner in which the lamp is hung, for the constant supply of oil to the wicks, as some people have imagined. The supply has to be regulated by the person using the lamp, who has to alter the position of the upper receptacle on the rest by moving it forward as the oil is consumed, and so depress the pointed portion of the receptacle in which the wick lies.

This form of lamp used to be very common in the Orkney Islands and in the North of Scotland till about twenty years ago, when the price of paraffin fell considerably, and the ordinary paraffin lamp took its place. It is now entirely a thing of the past, at least so far as the Orkney Islands and the North of Scotland are concerned.

DISCUSSION.

Mr. BERDOE described a brass lamp he had lately seen in Tangier, of precisely similar construction and principle as that exhibited from the Orkneys.

Dr. GABSON added that there was a brass lamp, similar to those he exhibited, but more highly finished, in the Museum of the Antiquarian Society of Scotland in Edinburgh, which had been obtained in Scotland, a fact that was interesting in connection with Mr. Berdoe's remarks.

EXHIBITION of a DEFORMED SKULL of a CHIMPANZEE.

By Professor W. H. FLOWER, LL.D., F.R.S., *President*.

PROFESSOR FLOWER exhibited the skull of a young chimpanzee (*Troglodytes niger*), which had been sent to him from Lado, in the Soudan, by Dr. Emin Bey. It presented an interesting example of acrocephalic deformity, associated with complete synostosis of the fronto-parietal or coronal suture, and partial obliteration of the sagittal suture, both of which are normally open long after the age to which this individual had attained. The specimen has been more fully described and figured in the Proceedings of the Zoological Society for 1882, p. 634.

Professor Flower exhibited in illustration an exactly corresponding deformity in the cranium of a negro from the West Coast of Africa, but remarked that he was not aware that any case had previously been recorded of its occurrence among the apes.

The DIRECTOR then read extracts from the following paper:—

NOTES on some AUSTRALIAN TRIBES.

By EDWARD PALMER, Esq.

The Tribal Territories.

THE information which I have embodied in the following notes has been obtained by personal observation and inquiry; in those few instances where my statements rest upon the observation of others I shall quote the authority upon which they are given.

The tribes referred to are the following:—

1. *Mycoolen*.—These people hunted about the Saxby River, a tributary of the Flinders on the eastern side, which joins that

river about a hundred miles from the shores of the Gulf of Carpentaria. They hunted to within forty miles of Normanton on Spear Creek, and occupied the Lower Saxby River, the country about Donor's Hills, and south nearly as far as Millungera Station, and east as far as Green Creek, and through the sandy forest bordering on the Saxby Plains.

2. *Myappe*.—This tribe joined the Mycoolon on the western side, and occupied the country about the Canobie Station and the junction of the Dougald and Cloncurry Rivers. They hunted down the Cloncurry to Sorghum Downs, about forty miles below Canobie Station, and westward over the country which is in McKinley's Journal called Davis Creek, but now known as Dismal Creek,¹ and as far as Middle Creek between the Dougald and Caralah Rivers, taking in Fort Bowen Mountain and the Middle Cloncurry River. Their country must have been about sixty or seventy miles in length, by about forty or fifty in width.

3. *Mythuggadi*.—This tribe occupied an extent of country of over one hundred miles square, comprising the Upper Cloncurry River, Julia Creek, McGillivray's station on Eastern Creek, and halfway towards the Flinders across the immense treeless downs. Their country was rather poor in game.

4. *Mygoodano*.—These people used to hunt over the west side of the Leichardt River, and extend as far west as the Gregory River, and up by the mountains to the south; occasionally to Burketown and the Albert River northwards, where they joined and had intercourse with the Myngeen tribe at Burketown, who owned the country thence to the coast.

5. *Yerrunthully*.—This tribe occupied country extending to the westward of the Flinders River to Cambridge Downs; sometimes they hunted a little lower and southward as far as Lammermoor Station (Christison's) on Tower Hill Creek, where they joined the Moothaburra tribe, which extended eastward until meeting with the tribes inhabiting the country about the Suttor and Belyando Rivers.

6. *Kalkadoona*.—These people inhabit the country at the heads of the Cloncurry, and southwards for a very long way; westwards across the heads of the Leichhardt and Gregory Rivers, and next in position to the Mygoodano tribe. Not much is known of this peculiar people, as they only occasionally visit the Upper Cloncurry.

7. *Koogobatha*.—This tribe once roamed over what is now the Gamboola cattle run; mostly on the north side of the Mitchell River, and as far down as the junction of the Lynd

¹ The native name of this creek is Thalman.

There is no indication in the weapons and manufactures of the northern tribes to which I refer of any intercourse with Malays.

Speaking generally of the northern tribes to which I here allude, I may note that the hair is mostly straight, with an inclination, when clean, to wave; all the men are bearded, straight, well grown, and strong. Physically these men appear to me to be superior to those of tribes further to the south, and inclined to be tall. One man on the Saxby River is said to have measured 7 feet in height.

On the Lower Flinders River the women are noted for their height, and are capable of great power of work and endurance of fatigue. The people are generally healthy, though subject to colds and coughs. The women have little difficulty in childbirth, and death from such a cause is exceedingly rare. At such times they are attended by one or two old women, and the husband keeps entirely away. The umbilical cord is cut with a mussel-shell close to the skin, and that is all the trouble taken about it. The child is not washed in water, but if the weather is cold is rubbed with fat and charcoal. At first the little thing would be considered white, but in a few weeks the colour darkens. They are all fond of their children, yet their affection is about equally divided between them and their dogs, and I have seen them lick them, kiss them, and nurse them, and even suckle them at the breast.

The child is carried under the arm when young, in a piece of ti-tree bark, with a string round the centre and over the shoulder, the arm pressing it on the outer side, to keep it close. When a little grown the child is carried across the hip, supported with one arm, and afterwards across the neck, holding itself on by the mother's hair. The youngsters are precocious, and able to take care of themselves and hunt at a time when white children are all but helpless.¹

Infanticide is not so common as supposed, though a girl's first child is often sacrificed. Abortion can effect the same purpose, and they have no hesitation in having recourse to it, effecting their object by blows. One girl was known to have thrown herself across a log to produce the death and speedy delivery of the child. The killing of a new-born infant is a matter of small moment to Queensland blacks; if one expresses abhorrence at such an act they merely grin.

The northern blacks are stoical, and possessed of great forti-

¹ The mothers flatten the noses of their young children by pressing it occasionally with the hand on the point, or laying it flat on the face. The natives laugh at the sharp noses of Europeans, and call them in their language "tomahawk noses," much preferring their own style of flat broad noses.—E. P.

tude in enduring hunger and thirst uncomplainingly. They will receive wounds and punishment without flinching, and meet death with silence and great sternness.

They can feign death as well as their companion the wild dog. Even when desperately wounded, they will lie without a token of life, and suffer any inspection, but when all is quiet will carry themselves away, and generally recover from wounds that would kill a white man.

The women lead a hard life, and are subject to much abuse and hard treatment at the hands of their husbands: blows over the head with a stick are the most common mode of correction, and spearing through the body for a slight offence; even to kill a gin is not considered a very great offence. Yet I must note that I have known couples live to old age and have large families (four or five children) whose bond of union seemed to be a mutual regard. The man had no other wife, and she no other man. Such instances were, however, uncommon, as the man had generally tried to keep some other woman some time or other of his life. Women were often compelled to live with men they did not like.¹

Some of the females when young are comely in face, and have beautiful figures, with small hands and feet, and a perfect carriage. They have bright shining eyes, merry voices, and a clear ringing laugh; and in spite of a life of hardship and exposure, and blows from friend and foe, the women sometimes attain great age. Instances of both sexes with white hair, and all the appearances of seventy years, are common among aboriginals when first interviewed by whites.

Men are allowed several wives; instances are common of two and three, and one or two I have known to have even as many as six wives to one man. There are some men who never seem to have a wife: these are principally young men, who have not had a chance of procuring one. I knew one man who had been imbecile for years from sickness, and yet he made his gin obedient to him.

The circumstances under which a man would obtain more

¹ The women are modest in their habits; for instance, when sitting down, they do so in such a manner as to hide what nature intended to be hidden. Their ideas of nakedness are not gross or rude, but simple and natural, as part of their simple and natural life. They are as innocent of shame as the animals of the forest. They appear to most advantage when naked, the men showing their well made and muscular bodies best without any clothing, and their nakedness does not appear unseemly, as if a white man were stripped. This refers to natives as they are first found by Europeans; even after being used to clothes, they delight to get everything off at times and walk about as of old. Black boys, used to wear clothes for years, invariably take off everything when they go to sleep however cold the night may be, thereby following out an old instinct.—E. P.

than one wife would be by persuading other blacks to give him one, or by capture of a woman, or by stealing one from some distant tribe, or by inheriting the widow of a dead brother. A new woman would always be beaten by the other wife, and a good deal would depend on the fighting powers of the former whether she kept her position or not. In these rows the husband would take the part of the new wife, or the favourite wife.

The faculty of locality, or observation, is strongly developed, even in the young. All blacks can find their way through scrubs or bush, or over plains for any distance, as if by instinct, going in a straight line to any place they wish. In fact, all their senses are well developed, especially the sight, which is keen and far-seeing. Many blacks on the Flinders have been noticed with a scum over one eye, or one eye turned white, and the cattle on the plains are subject to the same disease, caused by flies after the wet season.

There is no hereditary chieftainship, or any one possessing authority among the northern tribes, so far as can be made out; one man being as good as another. To old men, however, great respect is shown, and whatever authority is acknowledged among them is centred in the aged, on account of their years and grey hairs. All matters connected with their social affairs are settled in open council at night, when each man speaks from his camp in turn, and is listened to without interruption. No young men or lads join in the talk, but when merely social topics are discussed women often put in a word, especially the old. The elders were always treated with respect, never addressed rudely or with disrespect.

They have messengers who travel long distances from tribe to tribe to carry news and make appointments to meet for hunting, dancing, *Bora*, or fighting. Their persons are, in a measure, sacred.

Cannibalism.

Blacks in Northern Queensland make no secret of such a thing as having eaten human bodies; they acknowledge it openly. At the same time there is every indication that the custom is followed more from certain traditions than for the sake of food. They are not cannibals as the New Zealanders were, or South Sea Islanders. Some blacks are buried without being eaten; in fact most are. In Wide Bay those to be eaten are skinned, and the skin is wrapped round a bundle of spears, with the hair left sticking up at the top, and the finger-nails are left on. The relic is carried from camp to camp and stuck in the ground

at each one, when it is surrounded by the women-mourners, who screech and cut themselves with tomahawks.

In the Gulf country the blacks killed in fight are eaten. If they die from wounds late in the evening or during the night they are cooked in the morning. A large hole is made in the ground and the body is cooked in one piece: it takes three or four hours to cook a blackfellow. The inside is not eaten, but is taken out and buried. The Gulf tribes do not skin their dead before roasting them. Having eaten all the flesh, the bones are placed in a tree or buried. The bodies of enemies killed are left where they fell; those of their own side only are eaten.

Children are eaten when they die, but the crime of infanticide is not very common, unless in the case of a first child.

Hunting Game.

Some of the tribes make large nets of coarse mesh and strong cordage for catching wallabies in, and at a general gathering of the people a great many of these nets are placed in different positions, with stakes upright, within a few hundred yards of each other. Where there are patches of scrub between, they make long "wings," leading towards these nets, of boughs, and drive the game towards them. The game that passes one net may be caught against another, and those that pass all the nets are killed by blacks outside. The Mycoolon tribe not having any wallaby have no name for it, but they make nets to catch emu with when drinking, and also for snaring ducks and water-hens. These latter gather in numbers after some wet seasons, running along the watercourses, and have a habit of always running along the ground, and refuse to fly unless frightened. Blacks, knowing this, take measures accordingly; they make long low fences of brushwood, polygonum, &c., alongside the watercourse, only 2 or 3 feet high, with others coming in towards them at an acute angle. Near where the fences meet a net is spread, and a black waits there to draw it tight when full. The birds are driven down the fence by a blackfellow showing himself at a distance.

To snare ducks a net is fastened overhead among the trees, and the blacks guide the flight of the game by throwing pieces of bark like a boomerang above them if too high, or beneath them if too low, making at the same time a shrill whistle, in imitation of a hawk. Pigeons are snared at the watering-places by a man concealed close to where they water, boughs having been placed round the edges of the pool or water-hole, compelling them to run in at a certain place, where some dead pigeons have

been placed in an upright, lifelike position. Turkeys are caught in the open plain by a man with a bush in one hand and a long noose fastened at the end of a long light spear; he follows one bird until close enough to slip the cord over its head.

Fish are caught in many ways, often in small hand-nets fastened on to a circular piece of thin stick; or shallow lagoons are dragged from end to end with a fence made of boughs; or traps are constructed of boughs, and the fish are driven in.

Crayfish are a favourite food, and are caught by hand, their long claws being seized in the mud. Turtles are caught when on their way to lay their eggs. The sawfish is only eaten by the old men, as it is said to cause sores to come out on the boys or females who eat of it.

They know the use of hooks and lines for fishing, forming their hooks out of bone or hard wood.

Food and Cooking.

After the wet season roots and seed are plentiful, and form a considerable part of the food of the natives, especially in the great plain country to the westward. They all use the seeds of a small grass which grows upon pebbly ridges, called by them the "Jil-crow-aberry" (*Sporobolus actinocladius*). The stalks are steeped in water to soften the seeds before grinding. The common rice (*Oriza sativa*) is gathered in large heaps, and threshed out on large flat stones, and the seeds are then steeped in water after being husked. A list of most of the vegetable food will be found in the part of these notes relating to plant knowledge on the Mitchell River. The natives have a greater abundance of animal food than on the Flinders, where no kangaroos, and not many emus, are ever found. The distribution of food supplies are, for the Flinders country, snakes in great numbers, pigeons and ducks, hawks, owls, fish, rats in great numbers, dogs, and roots and honey; and for the Mitchell River country numbers of wallabie, the larger kangaroo, crocodile, emus, fish, ducks, yams (*karro*), and honey, but there are no pigeons, few hawks and snakes.

All the natives use the large grubs called *Muthera*, taken from the roots of the whitewood (*Atalaya hemiglauca*); these are as long as the finger, and are considered as a great delicacy.

They eat the young ants and eggs, and those of the white ant particularly, burrowing under the large dome-like nests where these ants breed underground. They gather the young ants with wings about to colonise, eggs, larvæ and all, and clean them from pieces of clay, straws, sticks, and rubbish, by rolling them up and down in a long basin made of bark. They eat every-

thing that is eatable. At the Saxby River they are fond of the small harmless crocodile (called *Chilcha-boona* and *Kulcha*), which are very numerous in the Gulf rivers in fresh water. The blacks swim after them and catch them with their hands; the eggs of these reptiles are found in the sand of the rivers, and are used as food.

They roast all their food, or bake it in the ashes, making hollows in the ground and heating stones therein, in which the game is placed and covered over completely with hot ashes.

For fish and small game leaves are frequently placed on the stones, and also over the game before covering it up with the ashes. Stones are carried often from the bed of a creek or river some distance to use for heating the ovens, and if no stones are available, ant beds are broken up in small square pieces and made to answer.

All game is cleaned thoroughly before being roasted, first placing it in the flames to scorch, and then removing the inside by drawing it out of the smallest hole they can make. The inside is cooked and eaten while the body is roasting. Some birds, such as ducks, pigeons, and turkeys, are split open and laid on the ashes, while others, such as geese or swans, are roasted whole, hot stones being thrust inside them to help cook the faster. Game is never kept uncooked any time, but they make fires during the day when out hunting, and cook what they catch. It is very seldom that game, except emu or the large kangaroo, is cut up before being cooked.

Division of game takes place according to old-established rules, in which they practise considerable self-denial, the hunter often going short himself that others might have their recognised share. When a kangaroo is killed, the hind leg is given to the hunter's father, with the backbone; the other leg to his father's brother; the tail to his sister; the shoulder to his brother; the liver he eats himself. Sometimes his own gin will be left without any, but in that case it seems to be the rule that her brother gives her of his hunting, or some one else on her side. She will not get much from her blackfellow, unless there is a surplus. All game has to be shared according to rule, the best part going to the father's camp, the next to the father's brother's. A blackfellow would rather go short himself and pretend he was not hungry than incur the odium of having been greedy in camp, or of neglecting the rites of hospitality.

Snakes were broken in pieces and handed round.

Personal Marks.

Most of the Gulf natives mark themselves with raised cuts, across the chest and upper arm, made with flints at various

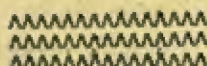
times while young. These cuts are merely ornamental, and convey no idea of tribal connection. All were more or less marked, and some of the bands of raised flesh were firm and hard like strong cords. One gin I observed had three rows of double cicatrices down her back, composed of eight couplets in each row.¹ The middle row across her spine was smaller than the two outer. The scars were very regular, and the rows set off a very graceful figure. Besides these she had several longer bands across her hips, below the small of the back; others on the upper arm, and bands of raised marks between her breasts. The women are said to mark themselves in this manner to add to their looks, and to make themselves attractive.

At the Bellinger River this species of "tattooing" is called *Munding*. The septum of the nose was always bored through, in which they occasionally carried a stick, but the ears were never bored. The hair of the men was worn long, sometimes tied in a knot in which a yellow feather was worn; that of the married women was always cut short, while unmarried women wore theirs long. Young girls wore a fringe round the waist made of opossum-hair twine, which was twisted by means of a crossed stick, the long ends being worked backwards and forwards on the thigh; the women also wore armlets of hair on the upper arm.

Weapons.

All the northern tribes of blacks use the reed-spear, generally barbed, which is thrown by the aid of the *wommer*. At the Mitchell River, and among some mountain tribes, a fighting man will sometimes not be properly equipped unless he carries a bundle of a dozen. These spears are made of one piece of hard wood for the point, joined with gum and sinew to a lighter piece of reed, in the end of which a hole is left bound round with string, into which fits a peg on the *wommer*. These spears are barbed with another piece of hard wood, fastened on near the point with fine sinew and wax, or pieces of sharp quartz or flints are embedded in gum on opposite sides of the spear. One spear found in the Normanby River had eight jags laid on one after another, flat and close to the shaft; these were all of the

¹ In Wide Bay, a gin was seen with small zigzag markings all over her legs and thighs, about 1 inch long and continuous, but not deep, merely the skin being marked permanently.



end of the sting-ray's tail, fastened very neatly to a shaft made out of the cabbage-tree (*Corypha australis*). Latterly the points have been made of pieces of telegraph wire, which the blacks steal and cut up for the purpose, using a barb of the same material. These light spears are thrown a great distance with the *wommara*; the native stands sideways, and with the throwing-stick between the fingers and thumb, he throws the light reed and spear to a certainty at over one hundred yards.

In addition to the spears they use the boomerang, but more for killing wild fowl than for fighting; they are made with only a slight curve, and do not return as do those used by the Wide Bay blacks, who use one much more curved, which is thrown for amusement, and returns close to the thrower. The boomerang of the northern tribe is used most frequently for beating time at corroborees; and a throwing-stick, made of hard wood, 3 feet long, thinner at one end than at the other, is used for killing small game. A large heavy piece of round solid wood is used with two hands for fighting. The *wommara* is made of straight hard wood, flat, $2\frac{1}{2}$ inches broad, and thin, with a strong peg fastened at one end, and frequently adorned with two white flat shells. The gins use a long pointed stout stick, hardened in the fire, for digging for roots from the earth, and for fighting among themselves.

Shields are seldom employed; the tomahawk is not used as a weapon, being reserved only for procuring game, and bows and arrows are unknown to them.

Manufactures and Ornaments.

The few manufactures consist of cordage, coarse and strong, for nets for catching fish and wallaby; and fine twine for bags and lines, and various other uses; *koolimans*¹ are made from the bark of the *Eucalyptus tetradonta* and strong large bags of cord, barred in red and brown, and capable of carrying great quantities of various articles, such as roots and fruit.

Articles of adornment, such as shells ground down to an oval shape with a hole bored through, bands for the forehead, necklaces of reeds strung on string for the neck, small instruments for cutting, such as flints fastened in handles of bark, and ochre for colouring are also used.

¹ These *koolimans* are also made of a piece of light or soft spongy wood, such as that of the coral tree (*Erythrina*), Kurrijong (*Sterculia*), &c., hollowed out with stone chisels when the wood is green. They do not split with the sun, or absorb water, and are very light. Those made of bark are cleaned and neatly tied at each end with a wooden skewer passed through the folds of the bark as it is doubled up; both kinds are used for carrying water, fruits, &c.

Canoes are only found among the coast tribes, where they are much used in the calm waters inside the Barrier Reef, and among the islands of the Gulf of Carpentaria. They are formed of three separate sheets of bark, cleaned of their outer rough covering, pointed at each end, and bored with holes along the edge for sewing together. One sheet forms the bottom, the other two making the sides and the ends. A piece of filling, or a roll of grass, is sewn in between the edges to strengthen and fill up the seams. The inner bark is always made to be the outside of the canoe. A rim is sewn of tough bands round the gunwale, to add stiffness and strength, while a cord across the centre keeps it from spreading, and a piece of wood acts at either end to keep it apart. Such a canoe is capable of carrying four or five persons, and can be used in a moderate sea. The blacks get into them out of the sea without upsetting, and bale out with a large shell. Holes in the bark are sewn up with grass, and broad paddles, 4 feet long, are used.

Drawings and Marks.

In caves and hollow rocks, where natives have been in the habit of resorting at times, they have left impressions and rude drawings of animals and men done with pipeclay, ochre, or charcoal.

Near the Roper River, close to the sea, I have been informed there are some long, overhanging sandstone rocks, with hollows worn away, where the natives have long had camping places. The face of the rocks bear evidence of ancient art, for they are covered with drawings in many colours; some are supposed to have been executed ages ago.

On the face of a small rocky cave near the coast range, close to Cooktown, there are figures which were evidently done by an aborigine before the advent of white men.

One figure has red rays proceeding from the head all round on every side. The mouth is wanting in all.

Sheets of bark are also used by them to draw figures on, and trees are marked with signs and cuts near graves and at *Bora* grounds.

The marks cut in their message sticks are not supposed to have any intelligible meaning, but had to be translated by the bearer. One of my informants, a blackfellow of the Myappe tribe, said these marks had no meaning to him, but that they might have a meaning to some of the blacks.

Boomerangs were also marked, but these marks were merely ornamentation in waving lines, yet they denoted ownership. A tree containing a "sugar bag," or bees' nest, is also marked by

the finder, and was thus protected to him until he wanted it. Any one disregarding such a mark would be regarded as doing wrong, and it would lead to a quarrel.

Amusements.

One of their amusements in summer weather is followed out in water by diving and floating quietly, or coming up with the head covered with duckweed for concealment, in imitation of water birds and animals in various ways. Games that tend to sharpen the eyesight and develop the arts of secreting themselves, and thereby helping to baffle their enemies, are the favourites. They will sit round in a small circle on the ground, and play a game with the lens of the eye of a cat-fish, a tiny clear speck. This is passed round from hand to hand, and dropped suddenly among the sand, and the one who first sees it is the winner, and in turn drops it again.

They also play at throwing a ball from one to another. The children play with a leaf heated and twisted, which is flicked into the flame of a fire, and they watch it ascend in the smoke in exact imitation of the movements of a boomerang. They sometimes use the winged seed of *Atalaya hemiglaruca* (the whitewood), the gyrations of which cause them amusement. To play with spears made of a cypress or rush, about 3 feet long, is a game that lasts for hours; or trying to spear a circular disc of bark as it is trundled along, causes much amusement.

In cloudy days they search under the dry limbs of a standing tree for the excrement of the small honey-bee, which remains within on such days. It is very minute, and none but the sharp sight of an aborigine could detect among the leaves and sand an atom so small that when laid in the palm of the hand it only looks like a tiny grain of yellow sand.

They are fond of sitting down and making footprints of all animals and birds and children, in a smooth place levelled with the hand, imitating the tracks with marvellous exactness.

I may note here that they recognise the footprints of most of their acquaintances from some peculiar shape of the foot, or its impression on the ground.

They are not given to boisterous games of strength or wrestling, so much as lighter kinds of amusement, such as throwing a pointed stick on the ground, causing it to rise and travel a long distance afterwards.

They have corroborrees, songs, and dances, the same as other Australian tribes. Parodies on scenes in life are worked up into song with a dance to match. A war party may be the subject to be parodied, when they will pourtray the arrival at

the enemies' camp, the surprise—coming round the trees and looking in on the victims, pointing at them and making signs to one another—then the attack and killing, and victorious return. Some have comical allusions, and will be received with the same amount of fun and laughter at each performance.

Some corroborrees are learned from strange tribes, and may be sung in a language to which they are strangers, and tribes meet to practise and exchange dances and songs, into which they will enter with great interest. Most of them take a pride in the dance, and wish to appear to advantage in paint and step and time. No strict rule is followed as to the decorations for the dance; some use bars of white clay across the body, or down the legs, while others will be spotted with white. No indecent or lewd dances are practised by them. In all their dances they keep excellent time, and stop suddenly at the end. Two boomerangs are used by the men to keep time, and the women squat on the ground in front of the dancers, and beat time on something wrapped up in front of them or in their legs. The ground is cleared of leaves, and a few small fires are lighted in front.

Many tribes join together to hold a large ceremonial corroborry, for which they have been practising for some weeks, in which only a few may join; but in all cases, as soon as a white man appears, the spirit dies out of the dance, and one after another drops out and retires. They like to be exclusive in their dances and *Bora* ceremonies, and the presence of white men at them is never sought after, and only tolerated at any time for fear of being thought rude or uncivil.

Beliefs and Superstitions.

Much of the information which I am now going to note as to their beliefs and superstitions I obtained from an intelligent old aborigine, seemingly of about sixty years of age. He could not speak English, and his information was obtained by the interpretation of several black boys who spoke English, and who checked each other's accuracy. I am satisfied that his statements are perfectly aboriginal in everything, without any ideas derived from whites. His name was *Plungreen*, which signifies "swift footed," or "fast runner," having been in his younger days chased by the blacks in the Leichhardt a great distance, without being caught. He had only four toes on each foot, having cut off each small toe himself, as it hindered him in running by catching in the grass. He was a tall, straight, wiry-looking old man, and a truthful and faithful aborigine of the Mycooloon tribe.

These Gulf tribes believe in a life after death, in a place they call *Yalaury*. They believe in spirits which they call *Limbeen-jar-golong*. They believe in a spirit above who looks after them when they are up there after death. When a blackfellow dies, they think his spirit stays for a time about his grave, or comes round the camp, and after a time goes up by the Southern Cross, which is used as a ladder to the milky way (*Boonyo*). The latter is called the road to *Yalaury*, and the dead travel along this road towards the north-east till they arrive at that country. It is described as a good land, a nice place, full of beautiful shady trees, and with plenty of water, with all things to eat that they have here. There will be game to hunt, kangaroos, &c., and their dogs, and their women and children. They do not fix the place anywhere, only say it is far away somewhere, and they think among the stars. The custom of knocking out the two front teeth is connected with the entry into their heaven. If they have the two front teeth out they will have bright clear water to drink, and if not they will have only dirty or muddy water.

They believe that there are two large carpet snakes (*Koore-mah*) of immense size, about forty miles long, either in *Yalaury* or on the road to it, which the dead blackfellows kill and eat, and which they believe are then reproduced; they fear these monsters.

Other spirits are the *Limbeen-jar-golong*, so called from the bark of a tree, as they are said to live inside the bark of a tree or on the limbs. These spirits are supposed to come out at night and walk about, and hold intercourse with the doctors or "mediums." Plungreen declared himself as one who was familiar with spirits, and said he had intercourse with them when he liked. He described them as like a blackfellow, but without any meat on their bones—only a skeleton, with eyes like stars, or like balls of fire, having hair and whiskers, and long ears sticking up like a horse's; they are all bone, and their hands or claws are sharp like talons. The blacks say they get their songs and dances from them, and that these spirits will come and dance with them before the medium or doctor. These spirits are said to be equally afraid of the blacks; they say one only comes up first, the rest hanging back or sitting down waiting—"wild fellow," as the blacks say—and afraid to come up close until persuaded. They sit on the trees, and when they overcome their fear the blacks hear them jumping down; after a time they come close up and dance and sing to the old men, to teach them, and they in their turn teach these dances and songs to the tribe.

The *Limbeen* carry a stick in the hand, always with a

crook at one end, and called *wommalongo*. They have women who are like themselves, and these carry a yam-stick. The blacks do not attribute much malice to these *Limbeen*, but say they are "good fellows," although they can work evil at times. They are, in fact, dead blackfellows, and grin and speak and eat food like blackfellows, and are often seen round old camping-places and old fires. The old headman, Plungreen, said that he saw them often, and talked long with them, and was not in the least afraid. Some of them are supposed to leave their graves and walk about at night and return at daylight. The spirits of hostile blacks, or tribes at a distance, are said to kill blacks with their sticks, or *wommalongo*, while the *Limbeen-jar-golong* of their own tribe are friendly.

The Yerrunthully tribe believe that there is a place they go to after death away among the stars, and the means by which they arrive there is by a rope, which they let go on reaching the top, and the falling of which is supposed by them to be indicated by the falling of a star; and the noise heard by them sometimes after a star has fallen (probably the bursting of a meteor or aerolite) is attributed by them to the breaking of the rope and its falling down. They believe that they will be blackfellows and gins in their new world; they expect to have plenty to eat, and have no dread of going there.

The Kombinegherry tribe, which inhabited the country on the Bellinger River in New South Wales, believe in a life after death; the dead blackfellow was supposed to go somewhere down below in the earth, but after that to ascend among the stars. They believe in a spirit which they call *Mango*, and in two superior spirits which exercise an influence on them and their destinies. One called *Coomboorah* is a spirit of goodwill towards blacks, and takes care of them, and tries to protect them from the influence of the other spirit, which is one of evil, and called *Tharragarry*, and works mischief on them. They are much afraid of this *Tharragarry*.

They call the sun *Burryogan*, a female, while the moon is male, and called *Thineburra*. The Southern Cross is composed of five sisters in one family called *Thanikan*; Orion is three brothers named *Thallan*, *Bullen*, and *Georgiddem*. The evening star is *Bungogin*, and the morning star *Kiwah Kurrywindah* (*Kiwah* is morning).

Among the superstitions of the Mycoolon is that known as *Beecharrah*. This is the being killed by an invisible spear, or, as they describe it, by the point of a spear which has been cut nearly through with a mussel-shell, a few inches from the point, by some one who wants to work mischief on another. The victim is supposed not to see his enemy approach, creeping from

tree to tree until he throws the fatal spear, which, breaking off at the cut, leaves the point behind, but without producing any wound, mark, or cut; no blood flows, the man feels none the worse, even does not know he is hurt. He goes on hunting, unconscious of harm, and returns to his camp in the evening as usual. During the night he becomes ill, is delirious or mad, runs about all night getting worse, and dies in the morning.

Thimmool is a pointed bone, which, being held over a blackfellow when he is asleep, or pointed at him, is supposed to cause sickness or death; it is not made to touch him, but only held close over him or near to him. They are much afraid of having the *Thimmool* pointed at them. It is said to be a human leg-bone, about 6 inches long, ground to a point.

The *Marro* is the pinion bone of a hawk, a double piece of bone in which hair of an enemy is fastened with wax. To work a charm on him a small circle of fire is made round it. It is then removed and laid in the sun; then put back again, just as they wish to make him only sick or to kill him. When they think they have done enough, and are satisfied, they place the *Marro* in water, which removes the charm.

Wingo is a superstition they have that with a rope made out of fibre or bark they can partially choke a blackfellow by putting it round his neck at night when he is asleep, without waking him, and his enemy then takes out his caul-fat from under his short rib, leaving no mark or wound, nor any blood flowing. His inside being carefully tied up with a string he is left alone after having this mischief worked upon him, the skin being carefully replaced so as to leave no mark. The victim on awakening feels no inconvenience, but by-and-by, perhaps months after while hunting, perhaps when following an opossum up a tree, he jumps down to catch him, and suddenly alighting on the ground, or perhaps even during some violent exercise, he feels the string break in his inside. "Hallo," he says, "some one has tied me up inside with string!" He then goes home to his camp and dies at once. The fat that is abstracted is used to catch fish with, and it is said to cause great luck to the fisher, the fish being easily caught with it for a bait.

Myths and Knowledge of the Stars.

As I have said, the milky way is called *Boonyo*, the road to Yalairy, or Heaven. The Pleiades are called *Numkine* (a maid, or virgin). The two black clouds near the Southern Cross are called *Junkerberry*, the emu. The two black spaces seen in the milky way (the absence of nebulae near Magellan's cloud) are two old blackfellows that were speared at *Bora* time near

the Taldora, on the Saxby River, long before the present blackfellows came to this part of the country, by a race who owned this country then, a very long time ago—so long that they have forgotten nearly all about it. They were very old men when they were translated, but became alive upon going up where they are now. The evening star is called *Yumby*, the dog; the morning star *Yaboroo*, a bitch; Orion's belt is called *Marbarungal*, a blackfellow; and a falling star is called *Jinbabora*; when a falling star bursts or makes a loud report, as is sometimes heard by them, the Mycoolon call it *Goonbor*, and say that the blackfellows are playing at carrying each other, and when one is let fall it makes the noise they hear. They say that the gum which grows on the whitewood tree (*Atalaya hemiglaucæ*), and in the gidya (*Acacia hemilaphylla*) and other Acacias, and which they are fond of eating, is produced by the falling stars, which strike the tree and go into it, afterwards coming out in the shape of gum. Their idea of the setting sun and of the movements of the visible solar system is, that the sun and moon and stars go underneath the earth through a hole underground, and their rising is their coming out of the hole at the other side. They believe that there is a great fire under the earth.

Death caused by a stone falling from the clouds, or a falling star, is said to be a penalty incurred by youths for eating forbidden food when young. The Mycoolon have no name for a comet, but are afraid of it. They wonder among themselves, and talk at night about these things, and the past existence of their race, and how they came here. They think there were other blackfellows here before them, and connect their history, past, present, and future, with the stars. All the blacks who have died are among the stars, and the old man Plungreen, when asked which way they went, motioned with his hand towards the north or north-east, and said that they went up first by the Southern Cross to *Boonyo*, the milky way.

The mountains and shadows seen in the moon are by them said to be scars on a big blackfellow, who killed a lot of their people on the Saxby River many years ago. He was killed in return and burnt, and these shadows are shown as the marks of the fire in his body.

Bora Ceremonies.

The Mycoolon form large stake yards at their *Bora* times, oval-shaped, or rather egg-shaped, open at the short end, and the shortest stakes there; at the closed and widest end the stakes are from 10 to 12 feet high, and as stout as a man's leg. The enclosure is 30 to 40 feet long, and 15 feet wide, and is surrounded by a ring of the earth heaped up.

The humming-stick, called *Mobolah*, used at *Bora* times only, is a flat piece of wood, 9 inches long and 2 inches broad, and thin with a hole bored in one end; it is swung round the head tied to another stick to warn the gins not to approach; no woman is ever to see it, or any uninitiated youth. At the ceremony the boy's arms are tied tightly with a string till they swell, and he is then kept two days without anything to eat; water is given, but no food. Among other rites practised is one of being covered with blood taken from the arms of all the black-fellows around. The youth is forbidden to eat of eaglehawk and its young, native companion and its young, some snakes, turtles, ant-eaters, and emu eggs.

Adjoining the Mygoodano tribe of the Cloncurry is a tribe called "Kalkadoona," members of which occasionally visit the former, coming from a long way to the south. There is not much known of them. They call themselves "Kalkadoon," in a long-drawn, whining tone of voice. They have a peculiar custom at their *Bora* time, and some of the Mygoodano are said to practise the same rites, but it is not the rule among them. At the *Bora* initiations the grown-up youths are held forcibly by a good many blacks and the urethra is slit along with a flint, not a mussel-shell, and when healed afterwards the urethra itself is taken out,¹ and it remains open ever after. The slit in some cases extends only a short distance from the scrotum, in others it extends the whole way from it to the glans penis. A similar custom can be traced from the Cloncurry River to the Great Australian Bight in the south. The females in some south-western tribes are operated on in some manner to prevent conception. These women have a mark or scar on the side above the hip where an incision has been made, and it is supposed that the ovary has been taken out, as in the operation of spaying. In other tribes the clitoris is cut, or subject to some operation by which it is supposed breeding is checked. These women go about with the other women as usual.

In the Bellingier River tribe the humming instrument is called *yeemboomul*, and the preparations for the *Bora* ceremonies last a long time, over a month. The ring for the *Bora* is called *geebarak*, and is made some distance from the camp; no gins are allowed near it on any account. The earth is banked up in a circle, and the inside made smooth and flat. The trees all round are marked with various signs. The lads are made to sit still for a long time with their eyes cast down; they are not

¹ In some only is the canal cut out, but I have been assured by competent witnesses that such is really done. The penis of those operated on hangs on the purse, and is always very disagreeable to look at, being moist and slimy with whitish mucus.—E. P.

allowed to look about, or give their attention to anything while the elders are preparing the final rites and giving them their lessons. The boys are only led to the ring and shown it, and all the signs explained to them at the same time. The *yeemboomul* is only sounded in the ring to warn the females from approaching, and at all times when it is sounded they are not to present themselves. It is left inside the ring during the day, and it is sounded at morning, noon, and night, and when all the ceremony is over they burn it. Any blackfellow coming inside the ring may sound the *yeemboomul*, but no one unless initiated is to use it. A fire is kept alight inside the ring, and each blackfellow has to make water in the fire.

A string is tied tightly round the arm of the youth, and a tooth is knocked out in front—sometimes two, but not invariably. The tooth is knocked out by placing a stick in the tooth and driving it inwards by a sudden blow from another stick. The tooth is spat out, but all the blood flowing from the wound is swallowed. The lads get all their instruction after their initiation, and being admitted into the ranks of men. Each lad is attended by one of the elders, who instructs him every evening in his duties, and gives him advice to regulate his conduct through life—advice given in so kindly, fatherly, and impressive a manner as often to soften the heart and draw tears from the youth. He is told to conduct himself discreetly towards women, to restrict himself to the class which his name confines him to, and not to look after another's gin; that if he does take another gin when young who belongs to another, he is to give her up without any fighting; not to take advantage of a gin if he finds her alone; that he is to be silent and not given to quarrelling. The secrets of the tribe are imparted to him at this time. These instructions are repeated every evening while the *Bora* ceremony lasts, and form the principal part of it. He is led to consider himself responsible for good conduct to the tribe, its ancient traditions, and its elders.

At these ceremonies, as in those of many other tribes, a quartz crystal is used. It is carefully wrapped up and no woman is allowed to look at it. It belongs to the headman, or doctor, or spirit-medium. With this tribe (*Kombinegherry*) it is called *koree*, and is used sometimes to buy a gin with from her father or father's brother. They think it is obtained sometimes from the inside of a blackfellow when sucked or drawn out by the doctor. The large ones are obtained by some blacks who go in quest of them to the mountains. They stay away for months seeking for them, and go through much ceremony and fasting and privations, in consequence of which the stones are supposed to come to them at night while asleep. The smaller crystals

are swallowed by the boys at *Bora* time. The large rock-crystal is venerated by most blacks, and is regarded with superstitious secrecy; it is the symbol of their Great Spirit.

There is a lesser ceremony at the Bellinger River which is said to lead up to the one I have described. It is called *Murwin*, and the place of ceremony has no ring, but is made of forks with long poles resting on them, forming an enclosed space.

Rain-Making.

Rain, it is supposed, can be brought or made in various ways, and the belief in this power is indeed universal in Australia. The blacks of the Mycoolon, Myappe, and Mygoodano tribes are full of faith in the power of producing rain or wind or storms. The Myappe steep the entrails of opossums in water for some days, and take them out, when decomposing, to produce rain. They also skin a native cat, and hang it on a tree for the same end. The Mycoolon doctors or elders are supposed to be able, by gathering up dust and throwing it about, and blowing with the breath, to be able to bring rain.

There is a belief strong in most blacks that some places are to be avoided on account of being haunted by some evil being; some places, as where blacks have died or been killed, they cannot be persuaded to visit.

In Wide Bay there is a place below the crossing of the Burnett River, a dark deep hole, where the scrub comes down to the edge of the water. The blacks used to say that something lived in the water there that would catch them if they went into it. Mount Canonmun, a high range about fifty miles from Maryborough, on the Gayndah road, is a place into which blacks will not go for fear of what they call in their English "devil-devil." It is said that in the early days of the Colony a lot of blacks were shot on the top of the mountain. There is a round prominent peak between Maryborough and Brisbane, near the coast, and visible from passing steamers, called by the natives "Boppel." The natives say that an old blackfellow lives on it who has the power of making rain, thunder, and lightning, and no one will venture near it.

On the Canobie run there is a lagoon of water fed by a soda spring, and surrounded with tall ti-trees; the lagoon is deep and clear, and the blacks refuse to go in or near it even, but the reason really is a superstitious one for keeping away from it.

Burials and Mourning.

It has been supposed that among their methods of disposing of the dead the Gulf tribes used cremation; certainly some

graves have been seen where there were only a few burnt bones and ashes of a fire. They buried their dead usually in the ground, but when they ate them they buried the bones or burned them, and this may account for the appearance of so few relics of the dead in some of the graves. When buried whole, some are laid in the grave full length, wrapped round with ti-tree bark and twine very tightly, the grave being dug about 2 feet deep, and a fire made in it before the body is put in, a fire being kept burning near the edge on the surface. When putting a body in a hollow tree, they place it upright, having cut a piece out of the tree shell, which they replace and fasten up very securely.

In the Wide Bay tribe the dead are sometimes buried in the ground, at others laid on a platform 6 to 8 feet high, and covered with bark and boughs. When buried, the corpse is often placed in a sitting posture, with a stick passed through under the knees and fastened at either side. In some cases they are very particular that no earth shall touch the body, and make a stage above the body of bark and sticks, on which they pile the earth. Trees are marked sometimes where the body is buried, and the earth raised up over the spot. A woman sometimes carries the bones of her child for months wrapped up in a bag at her back.

At Wollongong, in New South Wales, there was many years ago one spot to which the blacks resorted from all parts of the district to bury their dead, covering the graves with piles of sticks. There were over fifty buried in one spot at that place. They always put their dead out of sight in that tribe as soon as they could. They sang the death-song frequently for weeks after a death, and testified their grief by many sorrowful expressions, also cutting the head to cause it to bleed. The women mourned in concert, and showed their grief by outward tokens, as by putting mud on their heads and all over the body, frequently awakening in the night to sing a mournful song, and cry for the dead. In the case of a widow mourning for her blackfellow, she abstained from eating opossum, ducks, turkey, and emu, only eating snake, iguana, and fish, and she continued this for three floods. It was the husband's brother who took the widow to wife.

In the Bellinger River tribe, *Thooloor* means mourning for the dead, which is shown by putting charcoal on the face, and round the eyes, and they are in the habit also of cutting their heads with tomahawks till blood is drawn. A widow abstains from eating any animal that runs on the ground, such as kangaroo, wallaby, &c., for about two years. She eats whatever climbs trees, and that only.

They never mention the name of a blackfellow after his death, nor any place called by the same name.

I may note, finally, that in some of the tribes the females of any animals are not eaten by widows.

Healing Craft.

Among the northern tribes many devices and charms are resorted to in the cases of pains and sickness. The doctors are men who, it is supposed, possess great powers of healing, some of which they obtain from the spirits. They use stones and crystals to put away sickness from any one, and sometimes they bandage the afflicted part with string tightly until no part of the skin is visible. One common plan of alleviating pain is by bleeding, supposing that the pain comes away with the blood. For this minute cuts are made through the skin with pieces of broken flint, or the edge of a broken mussel-shell, over the part affected, and the blood is wiped off with a stick. Sometimes the doctor ties a string from the sick place, say the chest, and rubs the end of it across his gums, spitting into a *kooliman* of water, and passing the string through also; he then points to the blood in the water as evidence of his skill in drawing it from the sick person. Stones are sucked out with the mouth, and exhibited as having been taken from the body.

A good number of plants are used for sickness as drinks, and for external application. A broken arm is cured with splints made of bark and wound round tightly. Snake bite is cured by scarifying and sucking the wound, and by then using a poultice of box bark bruised and heated.

Class Systems.

There is no well-authenticated instance with which I am acquainted of any Australian blacks who were without one form or another of divisions into classes; where such divisions have been believed to be absent it has been from the want of their being discovered by the observer, and not from their non-existence. The blacks are born into these divisions, and are reared up with the idea instilled into them that it is necessary for them to observe as sacred the class rules; indeed, to many it would be like sacrilege to marry contrary to these established rules. They do not give any traditions as to when these rules were first introduced, the fact being that they have carried the idea of the divisions with them through all their wanderings since they first settled in Australia. It seems strange, but is perhaps not unaccountable, that the classes and their divisions

found in all the tribes correspond with each other, although differing in name or in totem, over localities separated from each other by hundreds of miles.

Like all other Australian tribes, those of the Gulf of Carpentaria are divided into separate divisions. Taking the Mycooloon tribe as an instance, adjoining tribes have the same class names, and have totems having the same meaning. Tribes at a greater distance have a different set of divisions, with distinguishing totems for each class. In cases of distant tribes it can be shown that the class divisions correspond with each other, as, for instance, in the class divisions of the Flinders River and Mitchell River tribes; and these tribes are separated by four hundred miles of country, and by many intervening tribes. But for all that, class corresponds to class in fact, and in meaning, and in privileges, although the name may be quite different, and the totems of each dissimilar. Some tribes have males and females of the same name, while others have separate class names for males and females.

It is well known now that from Moreton Bay to the shores of the Gulf of Carpentaria, a distance of over fifteen hundred miles in length, and for seven hundred miles inland, or even to a much greater distance, the blacks are divided into divisions for the purpose of preventing too close connections in marriage, and that all these divisions correspond with each other. Thus a blackfellow from one of the most southern tribes could easily tell from what division he could obtain a wife if he were to visit a tribe in the far north, if such a visit could be effected, and he were received by them. Since the advent of the white race these regulations have been broken down and greatly neglected and lost sight of, excepting where a tribe has been living in the bush, free from the influence of civilisation.

All nature is also divided into class names, and said to be male and female. The sun and moon and stars are said to be men and women, and to belong to classes just as the blacks themselves.

They have a great reverence for the particular animal symbolising their respective classes, and if any one were to kill, say, a bird belonging to such a division in the sight of the bearer of its family name, he might be heard to say, "*What for you kill that fellow? that my father!*" or "*That brother belonging to me you have killed; why did you do it!*"

They often addressed each other by their respective class names, except aged men, whom they generally addressed as "father," or "old man."

The relationships of the natives are founded on these laws: they call their father's brother the same as father, and mother's sister the same as mother. Our ideas of kinship are so different

to theirs that calling them uncles or aunts or cousins or sisters or brothers does not convey any such meaning to them as it does to us, for they regard as brothers all those who belong to the same class or division as themselves; and among all blacks they discover some degree of affinity. They have a clear enough idea of their relationships; the fault seems to lie with us who do not comprehend theirs. Being founded on such a totally different system to ours, the individual relationship is, I believe, ignored for the sake of the class system. They recognise its relationships; hundreds of times a black boy has said, "Such and such a one is my brother," when I knew that he was not a brother, as we call such a relationship, and the same with father and mother. A blackfellow will say, and will be correct in saying, "So many are my fathers," or "So many mothers I have;" he should call them uncles or aunts; but brought up under the influence of their class system of relationships, it is as difficult for them to understand our system as it is for us to get at the secret of theirs. But there can be little doubt but that all their relationships are founded on the class systems or divisions, and they recognise such relationships, and call each other by them. From their earliest youth they comprehend such relationships, and know no other.

To marry a sister is looked upon as a crime; such a case is not known among them; they cannot conceive such a thing possible. Young people are affianced when very young, and they often elope and stay away for some time. A woman captured, or taken in war, would not be kept unless belonging to the class into which her captor could marry. Sometimes a woman was obtained by asking her father for her. Seldom was a woman taken by violence, or knocked on the head and dragged away, as has been said very often. In the Kombinegherry tribe at the Bellinger River, in New South Wales, a wife was obtained from her father by his consent. The son-in-law never looked at his mother-in-law, and always avoided her presence in the Gulf tribes, but the father-in-law did not come under the same restriction. They made raids into each other's territories to steal gins, going sometimes long distances for them.

I now give the class systems of a number of tribes, including a few which I have quoted for comparison.

The Yerrunthully tribe has classes which have male and female members in one name. This tribe is situated on the heads of the Flinders River, near Hughenden, a post and telegraph town west of Townsville. My informant was of this tribe; and of the class name "Bunbury."

Four classes belong to this tribe, namely:—

Male	Marries	Children are
Bunbury	Woonco	Coobaroo.
Coobaroo	Koorgielah	Bunbury.
Koorgielah	Coobaroo	Woonco.
Woonco	Bunbury	Koorgielah.

Each boy and girl in the tribe is born under one of these four divisions, and is subjected to the laws connected with the tribal marriages. As each class name has a representative in other tribes they would be subject there to the same regulations.

These classes are represented by totems, which are different to those of the Mycoolon tribe lower down the same river.

They are four:—

Bunbury	Carpet snake	<i>Tharoona.</i>
Coobaroo	Brown snake	<i>Warrineyah.</i>
	Emu	<i>Goolburry.</i>
Koorgielah	Plain turkey	<i>Bergamo.</i>
	Native dog	<i>Cubburah.</i>
Woonco	Whistling duck	<i>Chavelah.</i>

This tribe has a general name for snakes (*Moondah*). This snake *Warrineyah* is small, with a small head, and is said to be very deadly. It is by this tribe that the inner bark of the Hooded boxtree (*Eucalyptus microtheca*) is used as a cure for snake-bite, by being pounded fine and applied as a poultice to the part bitten, after it has been scarified and bled.

The class names of the Mycoolon represent those of several adjoining and allied tribes. The Mycoolon tribe is about one hundred miles south of Normanton, a post and telegraph town on the Norman River, at the Gulf of Carpentaria. This tribe is divided into four intermarrying classes, as follows:—

Male	Marries	Children are
Marringo ..	Goothamungo ..	Bathing and Munjingo.
Yowingo ..	Munjingo ..	Jimalingo and Goothamungo.
Bathing ..	Carburungo ..	Marringo and Ngarran-ngungo.
Jimalingo ..	Ngarran-ngungo ..	Yowingo and Carburungo.

A blackfellow can only marry into one class, namely, that opposite to his name; the other three are forbidden to him strictly. The descent seems to be reckoned through the mother, for the child takes its name, not from its own mother's class, but from the grandmother's class. If we take Goothamungo as an example, her daughter will be "Munjingo" (having of course also a personal name as well); Munjingo's husband must be "Yowingo," but her daughter takes the class name of her grandmother "Goothamungo," her son being "Ismalingo." So that the name comes through the mother, the father's class name having no influence in the matter. The class name always goes back to that of the grandmother on the female side. Goothamungo's daughter is always Munjingo, and Munjingo's daughter is always Goothamungo, and so on in succeeding generations. The father might possibly be of a name representing the proper class, but from a far away tribe, for the class names correspond in different tribes in class though not in name; still the children take their name through the mother in this tribe. It is, however, possible for descent to be through the father; it is said to be so, and that this classification shows that the system in this tribe is an advance upon the simpler Kamilaroi system. This must be left for future inquiries to show.

No inquiries have yet elicited the fact that there are two primary classes to these four minor divisions, yet they may be discovered in the future inquiries which I shall carry on.

Each class name has a symbol or totem in this tribe, or animal representing that class. Each young lad is strictly forbidden to eat of that animal or bird which belongs to his respective class, for it is his brother.

The classes are represented as follows:—

Marringo..	..	..	Black duck ..	..	..	<i>Karrabah.</i>
Yowingo..	..	{	Plain turkey ..	..	..	<i>Theorna.</i>
			Eaglehawk ..	..	..	<i>Cooreythilla.</i>
Bathingoo..	..	{	Carpet snake ..	..	..	<i>Koorema.</i>
			Iguana ..	..	..	<i>Yangolah.</i>
Jimalingo	..	..	Whistling duck ..	..	..	<i>Wallathoo.</i>

On the Leichhardt River, Jimalingo is represented by Wootharoo, whose totem is catfish.

The following are the class names and totems of the Koogobathy tribe, situated on the Mitchell River, sixty miles from Palmersville. These class divisions are also used by an adjoining tribe.

Male	Marries	Children are
Jury	Barry.. ..	Mungilly.
Mungilly	Ararey	Jury.
Ararey.. ..	Mungilly	Barry.
Barry	Jury	Ararey.

The totems belonging to these classes are as follows :—

Jury	Native companion	<i>Ingibba.</i>
Mungilly.. ..	Grass (<i>Panicum</i>).. ..	<i>Ookia.</i>
Ararey	Nonda fruit (<i>Parinari nonda</i>)	<i>Yuley.</i>
Barry	Yam (<i>Dioscorea sativa</i>) ..	<i>Karro</i>

These class names represent those on the Flinders River by some relationships which is unknown to me. I subjoin them and their representatives.

Jury	is the same as	Marringo and Ngarran-ngungo.
Mungilly	" "	Yowingo and Carburungo.
Ararey	" "	Bathingoo and Munjingoo.
Barry	" "	Jimalingo and Goothamungo.

On the Bellinger River, on the East Coast of New South Wales, there is a tribe named Kombinegherry, having the following classes. My informant, one of this tribe and of the class Kurbo, knew of no totem names associated with the classes. The tribal name is that of the language.

Male	Marries	Children are
Kurbo.. ..	Wirrikin	Wirro and Wongan.
Wombo	Kooran	Marro and Kurgan.
Marro.. ..	Wongan	Wombo and Wirrikin.
Wirro.. ..	Kurgan	Kurbo and Kooran.

The subjoined classes are those of a tribe near Rockhampton. I have found them at Wide Bay, a distance of two hundred and

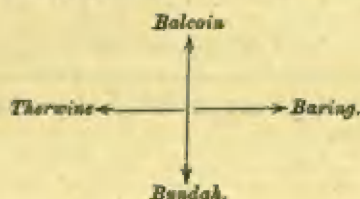
fifty miles to the south, and they occur with some little variations at Moreton Bay, still further to the south.

Male			Marries			Children are
Balcoin	..	..	Therwine	..	..	Bundah.
Therwine	..	..	Balcoin	..	..	Baring.
Bundah	..	..	Baring	..	..	Balcoin.
Baring.	..	..	Bundah	..	..	Therwine.

A peculiarity exists in this tribe, namely, that there is a name for each of the four families thus formed.

- | | | | | | | |
|---|---|-------------------|--|--|---|--------------------|
| (i) <i>Balcoin</i> (man)
<i>Therwine</i> (woman)
<i>Bundah</i> (child) | } | = <i>Yorome</i> . | | (iii) <i>Bundah</i> (man)
<i>Baring</i> (woman)
<i>Balcoin</i> (child) | } | = <i>Malaume</i> . |
| (ii) <i>Therwine</i> (man)
<i>Balcoin</i> (woman)
<i>Baring</i> (child) | } | = <i>Avong</i> . | | (iv) <i>Baring</i> (man)
<i>Bundah</i> (woman)
<i>Therwine</i> (child) | } | = <i>Goomee</i> . |

The blacks understand these relationships well, and exemplify them with two crossed sticks, thus:—¹



In this the child always takes its name from that opposite to its father's name. For instance, if the father is Bundah, the child must be Balcoin, and so on.

I find in Dr. Lang's work on Queensland the subjoined variations of this set of class names, which I extract for comparison; they extend from Moreton Bay and Frazer's Island in Wide Bay. It will be noted that the female class name is formed by the addition of *un* to the male name, and in this there is a resemblance to the termination of the female names of the Kombingherry classes.

¹ I am indebted for this single instance to Mr. Jocelyn Brooke, Sub-Inspector of Queensland Native Police.

Male	Female	Are
Barang	Barangun	Brother and sister.
Bundar	Bundarion	" "
Bandure	Bandurion	" "
Derwain	Derwaingun	" "

I find that at Mackay the class names are as follows, corresponding to those of Rockhampton:—

Yungaroo to Bundah.
Wootaroo „ Baring.
Gootels „ Balcoin.
Gooberoo „ Therwine.

To the westward of the Balonne River the classes are:—

Male	Female	Are
Urgilla	Urgillagun	Brother and sister.
Obur	Oburagun	" "
Unburri	Unburrigun	" "
Wengo	Wongogun	" "

Finally, over a large extent of country still further to the south the class names are:—

Male	Female	Are
Ippai	Ippata	Brother and sister.
Kubbi	Kapota	" "
Kumbo	Buta	" "
Murri	Mata	" "

Ippai marries Kopola; Murri marries Buta; Kubbi marries Ippata; Kumbo marries Mata. Though the names differ, the classification, and the laws formed upon it, are similar nearly everywhere, from New South Wales to the Gulf of Carpentaria.

Languages.

The common origin of the languages of the Australian natives is proved by the similarity of sound and structure in widely different parts of the continent, by the recurrence of the same word having the same meaning many hundreds of miles apart, and by personal names occurring in the same way. The words *Boree* and *Coogah* mean "fire" and "water" on the Lower Warrego, and are found with the same significance 1,400 miles distant, on the Mitchell River. The word *Cammo*, for "water," is used at Bourke on the Darling, on the Burdekin River, and at the head of the Flinders, in North Queensland; changing in many other localities to *Kam*. *Moloo* and *Yika*, which mean "nose" and "sun," are used both at Bourke in New South Wales, and at Maryborough in Queensland; at the same places *Tinnah* means "foot," and down the Lower Flinders, *Jannah*, a nearly similar word, is used for that member. The word for "eye," with slight changes, *mil*, *mel*, *mille*, &c., is very universal all through Queensland. The word for the number "two" is similar in scores of places far removed from each other.

In spreading over the country the blacks must have carried these and many other words with them, which they still retained in spite of the numerous causes which must have arisen for changing their language, as they separated, and became strangers to each other.

A blackfellow from one part of Australia will learn the language of a strange tribe in a few weeks, which would take a white man years to acquire, even if he ever mastered it.

The languages of some of the tribes near the Gulf of Carpentaria are, in fact, only varieties of one speech or tongue, common to many tribes spread over wide tracks, and yet in small adjoining tribes the commonest words are different.

Among the Gulf tribes the highest numeral is four, or at the most five. The terms for "heat" and "cold" are those which are used to indicate summer from winter. They have a name common to both grass and timber trees. They have neither singular nor plural number, nor does the noun change.

One difficulty met with in comparing these languages is, that white men do not always catch the sounds of the words in exactly the same way from blacks. *T* becomes *th*, or *d*, and the sound *ng* often becomes *k*. The knocking out of the front teeth affects the pronunciation of their words, the tongue in some words protruding through the opening. This might even in time help to change a language.

Many of the verbs in the Mycoolon dialect end in *i*; for instance:—

<i>ngi</i> = to speak.	<i>beemi</i> = to swim.
<i>walli</i> = to climb.	<i>wobbi</i> = to hunt.
<i>bunki</i> = to run.	<i>lowi</i> = to throw.
<i>gunthi</i> = to grind.	<i>warri</i> = to dig.
<i>wanjili</i> = to sleep.	<i>thewi</i> = to break.

The pronouns are in the same dialect:—

<i>ngice</i> = I.	<i>unaira</i> = we.
<i>gundo</i> = thou.	<i>gundo</i> , or <i>garra</i> (plural) = you or ye.
<i>nullo</i> = he.	<i>thanna</i> = they.

The conjugation of the verbs was taken down from an intelligent black boy of the Myappe tribe, who spoke good English, and whose language was similar to that of the Mycoolon.

Walli = to climb (a tree).

<i>ngie walli</i> = I climb.	<i>unaira walli</i> = we climb.
<i>gundo walla</i> = thou climbest.	<i>gundo walla</i> = you climb.
<i>nullo wallan</i> = he climbs.	<i>thanna wallan</i> = they climb.

For the past tense *wil* is prefixed to *wallun*:—

<i>wil ngie wallun</i>	= I did climb, or I climbed.
<i>wil gundo wallun</i>	= thou didst climb.
<i>wil nullo wallun</i>	= he did climb, or climbed.
<i>wil unaira wallun</i>	= we did climb.
<i>wil gundo wallun</i>	= you did climb.
<i>wil thanna wallun</i>	= they did climb.
Imperative, <i>gundo walla</i>	= you climb, or climb.

Beemi = to swim.

<i>ngie beemi</i> = I swim.	<i>unaira beemi</i> = we swim.
<i>gundo beema</i> = thou swimmest.	<i>gundo beema</i> = you swim.
<i>nullo beema</i> = he swims.	<i>thanna beema</i> = they swim.

For the past tense with the prefix *wil*:—

<i>wil ngie beemun</i>	= I swam, or did swim.
<i>wil gundo beemun</i>	= thou didst swim.
<i>wil nullo beemun</i>	= he swam, or did swim.
<i>wil unaira beema</i>	= we swam, or did swim.
<i>wil garra beema</i>	= you swam, or did swim.
<i>wil thanna beemun</i>	= they swam, or did swim.

Beeme is used interrogatively. Imperative, as—

gundo beema = swim, or you swim.

The verbs ending in *i* are construed alike: *walli*, *walla*, *wallun*; *bunki*, *bunka*, *bunkun*; *beemi*, *beema*, *beemun*; and the prefix *wil* to the terminal *un* forms the past tense; but sometimes an exception is made, as, for instance, *wobbi* = to hunt: they say *wobbi*, *wobba*, *wobbe*, or *lowi*, *lowa*, *lowe*, or *lowen*. This form of

conjugation seems to be that used by the tribes on the Flinders River.

There is a difference in the verbs of these tribes and those of the Kombinegherry tribe at the Bellinger River, in New South Wales.

The following I obtained from a black man of the class "Kurbo," of the Kombinegherry tribe. This man was most intelligent and was in receipt of good wages as a stock-keeper.

The personal pronouns are :—

<i>ngai</i>	= I.	<i>ngū-ūki</i>	= we.
<i>eenda</i>	= thou.	<i>eenda</i>	= you.
<i>yurrun, or</i> <i>illingitto</i> }	= he.	<i>woomarka</i>	= they.

Kieeng = to talk.

<i>ngai kieeng</i>	= I talk.	<i>ngū-ūki kieeng</i>	= we talk.
<i>eenda kieeng</i>	= thou talkest.	<i>eenda kieeng</i>	= you talk.
<i>yurrun kieeng</i>	= he talks.	<i>woomarka kieeng</i>	= they talk.

The future is formed thus :—

<i>ngai kiyu</i>	= I will talk.	<i>ngū-ūki kiyu</i>	= we will talk.
<i>eenda kiyu</i>	= thou wilt talk.	<i>eenda kiyu</i>	= you will talk.
<i>yurrun kiyu</i>	= he will talk.	<i>woomarka kiyu</i>	= they will talk.

The addition of the syllable *uki*, or of *unguki*, forms the past tense :—

<i>ngai kiūnguki</i>	= I did talk, or I have talked.
<i>eenda kiūnguki</i>	= thou didst talk, or thou hast talked.
<i>yurrun kiūnguki</i>	= he did talk, or he had talked.
<i>ngūuki kiūnguki</i>	= we did talk, or we have talked.
<i>eenda kiūnguki</i>	= you did talk, or you have talked.
<i>woomarka kiūnguki</i>	= they did talk, or they have talked.

Imperative :—*kiu* = talk ; *eenda* = you talk, or *kis kiu*.

Bindima = to throw.

ngai bindima = I throw ; *ngūuki bindima* = we throw ; and so on.

<i>ngai, or ngaitcha bindima</i>	= I will throw, &c.
<i>ngai, or ngaitcha bindimunuki</i>	= we have been throwing.
<i>eenda bindamunuki</i>	= thou throwest, or hast been throwing.
<i>yurrun, or illiningitto bindimunuki</i>	= he threw, or has been throwing.
<i>ngūuki bindimunuki</i>	= we threw, or have been throwing.
<i>eenda bindimunuki</i>	= you threw, or have been throwing.
<i>woomarka bindimunuki</i>	= they threw, or have been throwing.

Other examples are :—

<i>ngai karmugan</i>	= I break.
<i>ngai korm-agonuki</i>	= I did break, or I broke.

When talking amongst themselves excitedly or angrily, the flow of language of the blacks is very copious, the words running into each other, or being cut short, at the highest pitch of their voices.

The language of abuse towards one another is confined to personal allusions. The old women are adepts at it, and screech out their spiteful insinuations at a furious rate. Being translated they would mean: "Your eye is no good," or "Blind eye," or "Smoky eye;" "Your ear cannot hear, you are deaf; your belly stinks; your liver is rotten; your inside is decayed; you are lascivious; you are a prostitute;" and many other viler terms are used.

Many of the northern tribes have a sign language made by motions of the hands.

Plant Knowledge.

The blacks appear to have possessed a considerable knowledge of indigenous plants. Some of them had to be prepared by fire and water and many processes before being fit to eat, having some very deleterious, if not poisonous, properties, which could only be overcome by such means. And they had much experience in plants used for poisoning fish, and also for healing virtues and medicinal purposes. They were acquainted with the times of flowering and seeding of most plants, and their general knowledge of natural history was very accurate. This knowledge could have been obtained only by close observation, and generations of experience. In many parts of Australia this knowledge has died out with the blacks, and it is only in far away places like Northern Queensland, where civilisation has not yet displaced the aboriginal inhabitants, that any correct information can be obtained as to the plants which were in daily use by them. They were never in want of some vegetable diet, and in some seasons of the year fruit and roots were their principal food. In some places they stored roots or seeds for future use; and in hardening wood for spears they were acquainted with the value of fire as an agent. Their material for fibre or cordage was always plentiful, and they sometimes stained it red or brown, to make a pattern in colours for their bags, which were very strong and lasting.

Plants used by the Natives of the Mitchell and Flinders Rivers for Food Purposes.

1. *Typhonium angustilobium* (Aroidæ).—Native name on the Mitchell, *Wanjallo*. A pink tuber of large size, with long fleshy leaves; grows on river flats on the Mitchell, in good soil. The bulbs are bruised with a stone and roasted, then pounded for some time, and roasted several times before eating.

2. *Dioscorea transversa* (Dioscoridæ).—A yam of large size, something like a sweet potato, growing in scrubs in the Cook district, about King's Plains. The roots grow among rocks in

the crevices where rich soil is found; Normanby and Mitchell Rivers. The vine climbs to the tops of the trees in the scrubs, with a thin, brown-papery-like seed, which gathers in large clusters, and is conspicuous at a distance. The roots are dug up and eaten raw; of a sweet, juicy nature.

3. *Hibiscus divaricatus* (Malvaceæ). F. Aus.—Native name on Cloncurry, *Ngar-golly*; Mitchell, *Ithnee*. Annual shrub from 6 to 9 feet high, called wild rosella: soft prickles, stem rough and hairy. Two kinds of leaves grow on the same shrub. One is long, narrow, lance-shaped, with serrated edges; the other broad at the base, and triangular. Flowers large and red, opening during the evening. Grows on the sandy banks of rivers, Cloncurry. The young buds are eaten raw; also the root is dug up; the thick skin being peeled is eaten raw or uncooked; it has a pleasant juicy taste.

4. *Cynanchum floribundum* (Asclepiadaceæ).—Native name on Cloncurry, *Theoromia*. An annual plant, with erect woody stems 2 or 3 feet high, on the sandy banks of the Cloncurry River. Leaves lanceolate, and small insignificant flowers. Pods $1\frac{1}{2}$ inch long, tapering to a point, growing in pairs, with the flat sides opposite; full of cotton and small seeds. The young leaves and shoots are eaten, and pods before turning yellow, uncooked. They are said to fatten the blacks that live much on them. Plant full of milky juice.

5. *Physalis minima* (Solanaceæ).—Native name on the Cloncurry, *Necn-Gwan*. A native gooseberry; annual; about 2 feet high; bushy, soft, acute leaf, and a small white flower; stems reddish, triangular; grows on the Upper Cloncurry. Fruit yellow when ripe, in an inflated calyx similar to Cape gooseberry, sweet tasted, grows in great quantities, and eaten uncooked.

6. *Solanum esuriale* (Solanaceæ).—Native name on Cloncurry, *Oondoroo*. An annual herb about 1 foot high, found among the grass on all the plain country on the Flinders. A few pale green leaves, soft tomentose, alternate; erect stem. Fruit the size of a large marble, spherical and yellow when ripe; eaten both raw and roasted. Sir Thomas Mitchell mentions this plant.

7. *Maba humilis* (Ebenaceæ). R. Bn.—Native name on Cloncurry, *Thankoin* and *Mogiore*. A dark green shady tree, 20 to 25 feet high, grows in the sandy forest country, or along the banks of creeks. Leaves smooth, alternate, oval, 1 inch long; yellow fruit, $\frac{3}{4}$ inch long, oblong or egg-shaped, adherent to the calyx, and very plentiful; eaten raw.

8. *Capparis Mitchellii* (Capparideæ). Lindley.—Native name on the Cloncurry, *Karn-doo-thal*. A dark green shrub growing on the plains and billybongs of the Flinders, 12 to 15 feet high.

Crooked and rough stem; bark fissured longitudinally; large white flowers. Fruit 2 to 3 inches in diameter, with a rough exterior rind; eaten raw when soft and ripe. Called the large pomegranate by the settlers.

9. *Capparis spinosa*, var. *nummularia*. F. v. M.—Native name on Cloncurry, Longullah and Mijar. A spreading prickly shrub, 3 to 4 feet high; all over the Cloncurry country. Round alternate leaves, 1 inch broad, with two thorns on each side, recurved, branchlets axillary. Flowers large and showy, mostly white; sometimes pink on the same tree. Fruit yellow when ripe, larger than a pigeon's egg; eaten raw. Grows round yards and habitations freely.

10. *Capparis lasiantha*. R. Bn.—Native name on the Cloncurry, Wyzulah or Thulla-Kurbin. A woody climber, with a stem sometimes 3 or 4 inches in diameter, smaller branches with recurved spines. Leaves oval, acute, alternate; thick and fleshy tomentose, 2 inches long. Small white flower. Fruit splits lengthways when ripe, turning yellow, exposing the numerous black seeds embedded in a bluish pulp, sweet to the taste. The outer rind bitter and hot. Very plentiful on the plains after the wet season on both the Cloncurry and Mitchell. Eaten uncooked.

11. *Capparis lucida*. R. Bn.—Native name on the Cloncurry, Thoogeer. The small pomegranate; a shrub with broad dark green leaves, thick, on long petioles; buds erect at first, then drooping, growing singly. Small round fruit, eaten raw. Grows on Lynd and Cloncurry Rivers.

12. *Capparis nobilis*. F. v. M.—Small scrub tree; prickly. Leaves oval, oblong. Flowers white. Fruit globular, $1\frac{1}{2}$ inch in diameter, with small protuberance at the end.

13. *Encchyleena tomentosa* (*Chenopodiaceæ*).—Native name on Cloncurry, Koolo-loomoo. A perennial shrub, found all over the plain country on the Flinders and Cloncurry, frequently under the shade of trees; about 2 feet high; of a spreading tender nature. Numerous fine fleshy leaves, 1 inch long. Fruit a small red berry, flat, quite sweet; eaten raw. Called saltbush.

14. *Grewia polygama* (*Tiliaceæ*). Roxburgh.—Native name on the Cloncurry, Kooline. A woody perennial plant, 1 to 2 feet high; grows among the grass on the Cloncurry and Mitchell, and all over North Queensland. Leaves large, alternate, ovate, serrated, strongly veined, 2 inches long. Berries brown and smooth, two or four in an axillary peduncle, dry and hard, called emu berries, eaten raw. Leichhardt mentions this plant as having made an acidulated drink by boiling the berries in water when on his exploring expedition in Northern Queensland.

15. *Santalum lanceolatum* (*Santalaceæ*).—Native name on Cloncurry, Tharrah-gibberah. Tree 20 feet high, with drooping

branches. Leaves acute, lanceolate, opposite, $1\frac{1}{2}$ inch long. Flowers small and white, flowering in September. Fruit black when ripe, oblong, of a sweet taste, a fleshy drupe, the size of a small plum. Found all over the Flinders and its tributaries.

16. *Acacia farnesiana* (*Leguminosæ*).—Native name on Cloncurry, *Bunkerman*. A perennial prickly shrub, with numerous branching stems, 12 feet high, found on the Flinders plains. Small pinnate leaves. Flowers grow singly, with a strong sweet scent. Pods 2 inches long; round. Roasted before using when young.

17. *Acacia pallida*. Bentham.—Native name on Cloncurry, *Yadthor*. A soft-wooded tree 20 feet high, with drooping branches; grows on the plains on Cloncurry and Mitchell. Leaflets small and numerous; pendulous. Young trees thorny. The roots of young trees are peeled and roasted for food.

18. *Loranthus exocarpus* (*Loranthaceæ*).—Native name on Cloncurry, *Thappin*. The mistletoe growing on the whitewood tree *Atalaya hemiglauca* all over the Flinders plains; grows in heavy masses. Leaves curvate and irregularly shaped. Flowers red and yellow, thin and long. Fruit oblong-pointed; a fleshy drupe, $\frac{1}{2}$ inch long, with a soft stone. Gummy and sticky. Fruits in September. Eaten raw when ripe; sweet and pleasant taste.

19. *Cucumis pubescens* (*Cucurbitaceæ*).—Native name on Cloncurry, *Boomarrak*. The small cucumber grows on the plains and swamps, and among grass. Stem and leaves covered with short hard bristles. Yellow flower. Fruit $1\frac{1}{2}$ inch long and $\frac{3}{4}$ inch broad; specked, pale green, and white, or striped. Grows in great quantities after the wet season, remaining sound months after the small vines have disappeared. They are freed from the hairs by being rolled on the ground in handfuls. The natives bite off one end and press the pulpy substance and seeds into their mouths, and throw away the bitter outer rind. They are often roasted in the ashes, and are frequently used by the whites as a vegetable, raw and cooked.

20. *Cucumis acida*. "Tarquin."—Native name on Mitchell, *Ghewitchu*. Similar to *C. pubescens*, but smooth, or glabrous. Grows in shrubs and shady places on the Mitchell River. Fruit similar, but darker in colour.

21. *Cucumis melo*.—Native name on Flinders, *Binjie-binjie*. A small wild melon found on the plains among the grass, 2 inches in diameter, striped. Eaten raw. Several other varieties of small melon grow after the wet season on the plains, which are used for food.

22. *Ipomœa turpethum* (*Convolvulaceæ*).—Native name on the Cloncurry, *Kar-Kor*. A strong growing vine, annual. Leaf

6 to 8 inches wide, smooth and shining, and a large white flower, found on the plains after wet seasons. The seeds are large and black; three or four clustered on a long peduncle, axillary, covered with a fine tissue. The buds are eaten raw, while the seeds are white and soft. They are very plentiful on the vines after rains, and are made use of by whites as a vegetable.

23. *Dioscorea sativa*. Linn. F. Aus., vol. vi.—Native name on the Mitchell, *Karro*. Strong growing vine, on trees on river banks and scrubs in the Lynd and Mitchell rivers, very abundant in the wet season. Has numerous large tubers, with hair-like roots from all sides; yellow inside and very bitter. The tubers are gathered and stored in their camps. For eating they are first roasted, then broken in water and strained or squeezed through fine bags made of fibre, into long bark *koolimans*, or troughs, and washed through many waters: the sediment being stirred while water is continually poured in, and run off over the pliant edges of the trough. One native woman will mind several of these troughs at the edge of clear water. When it is sufficiently washed, and the bitter part drawn off, basins are made in the sand, lined with soft mud, in which the yellow fecula, looking like hominy, is poured. The water drains off, leaving the residuum to be scooped up with mussel-shells into large basins made of bark. The roots can only be used after this preparation, and are the principal part of their vegetable diet. Leichhardt mentions having tried to use these bitter roots on the Lynd River, having found them in the blacks' camps.

24. *Securinega obovata*. F. v. M.—Native name on Cloncurry, *Tharginyah*; on Mitchell, *Arrimby*. Perennial shrub, with numerous straight stems, 6 to 7 feet high, soft and brittle. Leaves alternate, entire surface rough, paler underneath. Fruit, small and white and juicy, grows in great quantities, fruiting in October. The natives gather them in bark *koolimans* to bring into their camps in bushels; about the size of small peas; eaten raw. Grows all over the country, from the Cloncurry to the Mitchell.

25. *Eugenia suborbicularis*. F. Aus., vol. iii, p. 285.—Native name on the Mitchell, *Oloorgo*. A large tree, 30 to 40 feet high, called a plum-tree; smooth brown bark. Leaves large and broad, gathered in clusters at the end of branchlets. Large white flowers, with numerous stamens. Fruit large and red, with stone. Eaten ripe. Grows in the sandy forest country between the Lynd and Cooktown.

26. *Terminalia platyphylla*. F. v. M.—Native name on the Flinders, *Durin*. Tree, 30 to 40 feet high. Leaf 6 inches long; rough bark, broken in small squares; wood hard and tough. Fruit small, oblong-pointed, blue when ripe, eaten raw. Grows

in or near watercourses on the Cloncurry, Gilbert, and Mitchell Rivers.

27. *Parinarium nondu*. F. Aus., vol. iii, p. 426.—Native name on Mitchell, *Yuley*. Large shady tree; grows in sandy forest country from the Saxby River to Cooktown, 30 to 40 feet high, with spreading branches, and drooping foliage: small flowers. Fruit $1\frac{1}{4}$ inch long, yellow when ripe, dry and mealy, with a rough taste, small rough stone. Eaten raw when ripe; very plentiful; much eaten by emus. It also represents one of the clans of the Mitchell blacks.

28. *Careya australis* (*Barringtonia careya*). F. v. M.—Native name on Mitchell, *Ootcho*; on Cloncurry, *Go-onje* and *Gunthamarra*. Tree in open forest, between the Saxby and Endeavour Rivers, very common, sometimes 20 feet high. Leaves broad, and gathered in a cluster at the end of the branchlets. Flowers conspicuous, white with pink inside at the base of the stamens, opening during the night time, with a heavy smell. Fruit large, with the calyx adherent. The roots of this tree are used by the Mycoolon tribe to poison fish. The fruit is eaten uncooked on the Flinders.

29. *Eucalyptus terminalis*. F. Aus., vol. iii, p. 257.—Native name on Cloncurry, *Narm-boon-bung*. A bloodwood tree, with reddish scaly bark on the trunk; grows to a height of 30 feet or more. Has large seed vessels. Grows on the Cloncurry in places, on the Gilbert and Ennasleigh Rivers.

Manna is procured from the leaves and branchlets by laying them in pieces of bark, when the particles of resin or gum fall off, or are scraped off with mussel-shells into a bark *kooliman*. Or the leaves, when covered with the white exudation, are pounded together with a stone and roasted in the ashes, or the sugary particles are gathered as they fall from the leaves. After the wet season this food is said to be abundant. Native name is *Kulcha* on the Gilbert for the manna.

30. *Persoonia falcata* (*Proteaceæ*). R. Bn.—Native name on the Mitchell, *Nanchu* and *Booral*. Shrub or tree, 8 to 12 feet high, crooked growth. Bark soft, scaly, reddish on the trunk, smooth on the limbs; leaf alternate, long, narrow and pendant; yellow flowers. The fruit is a drupe, $\frac{3}{4}$ inch long, pale green and soft; eaten raw. Grows in poor sandy country near the Gilbert and Mitchell Rivers, in open forest.

31. *Adenanthera abrosperma*. F. v. M.—Native name on the Mitchell, *Oondoo*. Tree 20 to 25 feet high, rough hard bark, pinnate leaves; pods filled with seeds, partly red and black. Grows in poor sandy country from the Gilbert to the coast. The seeds are roasted on the coals and eaten.

32. *Hibiscus ficulneus*. F. Aus., vol. i, p. 209.—Native name

on the Cloncurry, *Coorunyan*. An annual plant, 2 to 3 feet high on the plains; a few leaves; stem erect, gummy and sticky, with a few stiff hairs. Flowers large and pink, petals towards the base beautifully red. Stem and root of the young plant roasted in the ashes very nourishing; in flavour like young potatoes.

33. *Ammania multiflora* (*Lythreria*). F. Aus., vol. iii, p. 298.—Native name on Cloncurry *Jerry-jerry*. Small annual plant, a few inches high, among the grass on the Cloncurry River, with numerous small red seeds. The whole plant is gathered and ground with the feet to separate the seeds and branches. It is then winnowed and cleaned, ground with water, and baked as a cake.

34. *Panicum decompositum*.—Native name on the Cloncurry, *Tindil*. A grass, called umbrella grass, with a branching seed stalk and broad leaves. Grows on the Flinders plains in good country. Has fine yellow seeds, which are gathered and ground between two stones with water, and baked as a cake in the ashes, or poured in a fluid state into the hot ashes, when it thickens. It is found nourishing and satisfying.

35. *Oriza sativa* (indigenous).—Native name on Cloncurry, *Kineyah*. A wild rice, 4 to 6 feet high; grows after the wet season on the plains and swamps all over the Gulf country. The seeds are large and awned, similar to the rice of cultivation. The heads are gathered and threshed out on a flat stone. They are bruised and winnowed to get the husks from the seed, then ground between two stones with water, and roasted in the ashes.

36. *Sporobolus Lindleyii*. F. Aus., vol. vii.—Native name on Cloncurry, *Yak-ka-berry*. A tender, delicate grass, 1 foot high, with fine seeds and stalks; grows on ridges on the Cloncurry. The seeds are ground and roasted in the ashes in the form of a cake.

37. *Sporobolus actinocladus*. F. Aus., vol. vii, p. 623.—Native name on Cloncurry, *Jil-crowa-berry*. Another short grass, about 1 foot high; grows on pebbly ridges, near scrubs of gidya, or *Acacia hemilaphylla*. After gathering the stalks of seed, they are steeped for several hours in water, when the seed is easily rubbed out, and then ground with water between stones and roasted. Wherever this grass grows in New Queensland, the natives use it in the same manner.

38. *Portulaca olearacea*.—Native name on the Cloncurry, *Thuk-ouro*. The common pigweed, or portulac; grows after the wet season on the banks of rivers and sand ridges in great quantities. The fleshy stalks are roasted in the ashes, which softens them; also eaten raw. The seeds are roasted after grinding, and made into a cake; they are gathered by laying heaps of the stalks to dry on sheets of bark.

39. *Ficus aspera*. R. Bn.—The small fig, with rough leaves; grows in sandy places, on the banks of creeks. Great numbers of small black fruit, eaten when ripe.

40. *Ficus vesca*. F. Muel.—A large tree; grows to 40 feet high on the banks of the Mitchell and other rivers on the coast. Leaves ovate, lanceolate, acute, smooth, dark green above and paler underneath. The fruit when ripe turns red, and grows in clusters from the trunk, and on some of the larger branches. Eaten raw.

41. *Ficus sp.*—Native name on the Mitchell, *Orbolo*, or *Coomey*. A dark green shady tree, 16 to 20 feet high, with smooth oval round leaf, broad alternate; bears a small fruit, eaten raw; grows on the banks of the Mitchell, in good soil.

42. *Sarcocephalus Leichhardtii*. F. Muel.—Native name on the Mitchell, *Oolpanje*; on the Cloncurry, *Coolbiaby*. A large tree, growing in scrubs along the banks of rivers, 40 or 50 feet high, called the "Leichhardt tree"; erect stem; large shining leaves, deciduous; flowers globular, fragrant; fruit nearly 2 inches in diameter, soft when ripe, the pulp slightly bitter. Eaten raw.

43. *Ocokia acidula*.—A handsome shade tree, with branching foliage, and glossy pinnate leaves; covered with red fruit, eatable part, crimson sarcocarp, large stone, the fleshy part very acid. Grows on stony ridges on the Cloncurry.

44. *Bauhinia carronii*. F. Aus., vol. ii, p. 296.—Native name of Mycoolon tribe, *Thalmera*; of the Myappe tribe called *Pegunny*. A branching shady tree, with round oval leaves, in pairs, deciduous; grows all through the Gulf country; has abundance of scarlet flowers, appearing before the leaves. The flowers contain a clear honey, which is squeezed out by the fingers, and sucked. They also place the flowers in water, and make a drink of the water.

45. *Albizia monilifera*. F. v. M.—Native name on Cloncurry, *Mullar*. A spreading bushy tree; grows near water or lagoons near Normanton and Lower Mitchell; deciduous, bright green foliage. The young pods, several inches long, are roasted and eaten.

46. *Cymbidium caniculatum* (*Orchideæ*). F. Aus., vol. vi.—An orchid growing in the hollows of trees, with thick drooping leaves, 1 foot long. The tubers of this plant are used by the blacks in Wide Bay, and other districts; of a gelatinous, sticky consistency. It is considered good for dysentery, and such complaints.

47. *Pandanus aquaticus*. F. Aus., vol. vii, p. 148.—Native name on Mitchell, *A-Koo*. The screw-palm, grows in sandy country, often near creeks. The strong leaves are armed with

three rows of spines. The fruit, a large cone, is orange red when ripe, covered with rough nuts, embedded or attached to a rachis. The nuts are broken off, and held close to the fire, when the kernels are taken out and eaten. These broken nuts are to be seen in great numbers round their old camps through the sandy forest country.

48. *Cycas media*. R. Bn.—A graceful palm, with a crown of fruit growing at the base of the leaves; fruit round and smooth, the size of a walnut; very common on the coast, near Cooktown. The kernels of the nuts are poisonous, unless prepared by fire and water. After breaking the kernels and drying them, they are placed in a dillybag in water for several days, to extract the bitterness; the product is then ground with two stones to a pulp, and baked in the ashes. The blacks in Wide Bay used the nuts in this way. "James Morrill," the shipwrecked sailor, mentions that the natives about the Burdekin River also used them in such a prepared manner. White men have suffered for days from merely tasting the nuts in a raw state.

49. *Encephalartos miqueli*. F. Muel.—Dwarf zamia; grows in stony, poor country, a few feet high, near the coast, at Wide Bay and Cooktown. Bears a large cone of fruit, not unlike a pineapple. The seeds are baked in the ashes first, and soaked in water for several days, when they are pounded and roasted; experience tells blacks when they are fit for eating.

50. *Xanthorrhæa arborea*. F. Aus., vol. vii, p. 115.—Grass tree; grows in poor stony or sandy country, near the coast. The white tender base of the leaves are eaten, as well as the extremities of the young shoots. A small grub lives at the roots of this tree, which is considered a particular delicacy.

51. *Avicennia tomentosa*. R. Bn.—Mangrove; grows along salt-water creeks and swamps, plentifully near the shores of the Gulf. The fruit is baked or steamed in hollows made in the ground, in which they make fires; it is soaked and afterwards baked in the ashes.

52. *Caladium macrorrhizon*. Vent.—A strong herbaceous plant, with large sagittate leaves. Found in moist, shady places, near scrubs or creeks. The young bulbs, of a rose red colour, are baked in the ashes, and pounded, and the same process repeated over and over again till hard and fit to eat. The leaves and bulbs are very hot to the taste.

53. *Entada scandens*. F. Aus., vol. ii, p. 298.—A strong climber; pod 3 to 4 feet long and 4 inches broad; the seeds are 2 inches in diameter; grows on the Endeavour River, and always near the coast. The beans are roasted first, or baked in ovens, are then pounded fine, put in the dillybags, and left for ten or twelve hours in water, before they are fit to use.

54. *Sterculia rupestris*. Benth.—The bottle tree, sometimes called *Kurrajong* tree; grows all over North Queensland. The roots of the young trees are roasted and eaten.

55. *Cochlospermum* sp.—Native name on the Mitchell, *Kur-rutch*. A peculiar thorny tree, with large palmatifid leaves, growing in a crown near the top of the tree; straight stem covered with broad spines; grows 10 to 12 feet high, on the banks of the Mitchell. The roots of the young trees are roasted and eaten; the edible part is white and delicate, and of a most agreeable flavour.

56. *Nymphaea gigantea*. Hook.—Waterlily, very abundant in all lagoons and ponds, with large blue or white flowers. The porous seed stalk is peeled and eaten raw and roasted, as well as the round seed top, making a distinction between those with brown and black seeds. The large rough tubers growing in the mud are roasted; not unlike a potatoe, but yellow and mealy. It is a much used article of food with the blacks. On the Mitchell the roots are *Thoongon*, the seed stalk is *urgullathy*, the seed head *irrpoo*; on the Cloncurry the tubers are called *Thindah*, the stalk *Thoolambool*, and the seed head is *Millee*. The seed tops with light-coloured seeds are rejected.

57. *Nelumbium speciosum*. Willd.—The pink waterlily, a splendid aquatic plant, large floating leaf, 2 feet in diameter, peltate and slightly concave. Pink flowers, 6 to 8 inches across. The seeds, from twenty to thirty-five, are embedded in a flat-topped torus. They are broken with a stone, and eaten raw. Grows on the coast country, in large permanent lagoons, at King's Plains, near Cooktown, also near Rockhampton.

58. *Aponogeton* sp.—Native name on Cloncurry, *Tharndoo*. Found in shallow lagoons near Normanton and the Gulf Rivers. Oblong leaves, floating on the surface of the water; rachis erect; flowers small and yellow. Bulbs spherical, 1 inch in diameter; roasted or baked.

59. *Cynanchum* sp. (? *pendiculatum*).—Native name on Cloncurry, *Winejul* and *Mooloory*; on the Gilbert River, *Eendoolah*. A creeping plant, milky, in sandy country on the Cloncurry; leaf long and narrow, opposite, $2\frac{1}{2}$ inches long. Pods cone-shaped, 3 inches long, full of white cotton and seeds; eaten raw when young.

60. *Eucalyptus terminalis*, and other Eucalypts.—Galls grow on the young shoots, terminal, called *Kurcha*, like wooden balls, or excrescences, 2 inches in diameter. A small insect inside is eaten when the woody part is soft.

61. *Gardenia edulis*. The little bread-fruit tree on the Lynd River. Leichhardt's "Overland Expedition," p. 273.

62. *Musa Brownii*. F. Mueller.—The native banana. Grows

in scrubs on the alluvial banks of rivers from Cleveland Bay northward. The fruit is full of black seeds.

63. *Boerhaavia diffusa*. Linn. F. Aus., vol. v, p. 277.—Native name on the Cloncurry, *Goitcho* (Nat. Ord., *Myctagineæ*). A spreading, sticky, viscid herb, prostrate, several feet long. Leaf heart-shaped, darker on the upper surface. Grows on the sandy banks of the Mitchell and Cloncurry; has a long thin yam or root, 15 inches long, which is roasted and eaten; a pleasant mealy taste, and very nourishing.

64. *Carissa Brounii*. F. v. M.—Native name on the Cloncurry, *Kunkerberry*. A prickly branching shrub, about 4 feet high, spreading very much; small white flowers; leaves narrow, opposite. Fruit a small oval or oblong sweet currant, brown when ripe; grows in great quantities after the wet season on the Cloncurry in February.

65. *Limnanthemum crenatum*. F. v. M.—Small water plant, with fringed yellow flower of a fading nature; leaf, heart-shaped, serrated edges, or indented, floats on the top of the water in shallow lagoons; has a small tuber, round, roasted and eaten by blacks.

66. *Hibiscus pentaphyllus*. F. v. M.—Native name on the Mitchell, *Inne-idne*. Small shrub, 2 feet high, with two different kinds of leaves in the same plant; stems branching from the ground; roots and buds eaten raw. Found on the banks of the Mitchell River in loose soil.

67. *Polygonum hydropiper*.—Native name on Lower Flinders, *Booragoolah*. Found in shallow waters, with a long trailing stalk, sometimes reddish, and hot to the taste. The stalk is roasted and peeled, the pithy heart eaten.

68. *Acacia decora*.—Found on the plain country on the Flinders; a branching shady tree, about 15 feet high, generally covered with lumps of gum, which is always sought after to eat as food.

69. *Tricosanthes palmata* (*Cucurbitaceæ*). F. Aus., vol. iii, p. 315.—Native name on the Cloncurry, *Thorvan*. A rough strong climber, growing up the trunks of the tallest trees on the Flinders Plains, and on the Mitchell River; broad palmate leaf, or lobed. Stout stem, scaly, rough, and reddish, has a large root or yam; roasted and eaten.

P.S.—The identification of the specimens has been kindly undertaken by Baron Ferd. von Mueller, K.C.M.G., the Government Botanist of Melbourne, who has always shown himself very desirous of assisting, in any and every way, all who come to him for information. Many of the specimens have been determined by Dr. Woolls, F.L.S., of Richmond, who is ever

willing to give the benefit of his studies and large experience in Australian botany to any one seeking aid.

Plants used for medicine, or for stupefying fish, and for manufacture of weapons and cordage.

1. *Ocimum sanctum* (*Labiatae*). Linn. F. Aus., vol. v, p. 74.—Native name on Cloncurry, *Mooda*; on the Mitchell, *Bullabulla*. A fragrant shrub, growing near scrubs of gidya on the Cloncurry and Mitchell, about 2 feet high, with a woody, branching stem. The odour of this plant fills the surrounding air. The leaves are crushed up in a *kooliman* of water and drunk for sickness. White people make tea of it, called bush tea.

2. *Excoecaria parviflora*. F. v. M.—Native name on Cloncurry, *Jil-leer*.—The gutta-percha tree, peculiar to the Gulf country and the Mitchell River, sometimes 20 feet high. The wood of a strong pleasant smell; rough bark, and small leaves growing in raised clusters. Tree full of milky juice, very dangerous to the eyes. The natives use the bark bruised up in water in a *kooliman*, and heated with hot stones from a fire close by. This wash is applied externally to all parts of the body, for pains and sickness, while hot.

3. *Loranthus quandong*. F. Aus., vol. ii.—Mistletoe of the *Acacia hemalophylla*, numerous scarlet flowers hanging in clusters. The leaves are broken up in water and drunk for fevers, fever and ague, &c.

4. *Melaleuca leucadendron*. Native name on the Mitchell, *Atchoo-urgo*.—The large tea-tree found in the beds of all large rivers in the Gulf country. The young leaves are bruised in water and drunk for headache and colds and general sickness. The bark, which grows in thick layers, is stripped to make bedding for the natives, to protect them from rain, and is carried about from camp to camp.

Leichhardt mentions that the natives obtained a drink from the blossoms of this tree, soaked in water.

5. *Eucalyptus pruinosa*. Schaur, F. Aus., vol. iii, p. 213.—Native name on Cloncurry, *Kullingal*. Silver-leaved box, 20 feet high, stunted and crooked growth. Leaves silvery grey, covered with bloom, broad, opposite, and sessile. The inside bark is bruised, and wound round the chest and body very tightly for pains, damping it with water, and sitting in the water.

6. *Eucalyptus tetradonta*. F. Aus., vol. iii, p. 260.—Native name on Mitchell, *Olm-bah*. Called stringy bark or mess-mate. Found on the Mitchell and near Normanton in sandy country; 50 feet high, of a straight growth. Has pretty white

flowers and a large operculum. The leaves of the young trees are broken, and bruised up in a *kooliman* of water with the hands, till the water is thick and green, when it is drunk for fevers and sickness, headache, &c.

7. *Eucalyptus microtheca*. F. v. M.—Native name on Cloncurry, Jinbul, or Kurleah. The coolibar, or flooded box, found on all Gulf waters, often in flooded ground, a tree of crooked growth, branching crooked, 30 feet high. The branches and leaves, after cutting up small, are laid in the water for several days, which has the effect of discolouring the water and sickening the fish. It is universally used. The inside bark is used as a poultice for snake-bite, crushed and heated with hot stones in water.

8. *Tephrosia* sp. (*Leguminosæ*).—Native name on Cloncurry, Jerril-jerry. Shrub, 3 feet high, found on sandy ridges on the Cloncurry, of a bluish appearance. Small dark red flowers like a pea. Pods 1 inch long. Leaves cuneate. The plant is bruised, leaves and all; and used to poison fish.

9. *Luffa aegyptiaca*.—Native name on the Mitchell, Bunbun. A vine found in the bed of the Mitchell, Gilbert, and Ennasleigh Rivers, climbing into the tallest trees. Broad leaf and large yellow flower. Pod 6 inches long, full of juicy seeds, and a spiral thread. Used when green to poison fish.

10. *Barringtonia racemosa*. Blume.—Native name on Mitchell, Yakoora. Fresh-water mangrove, found in shallow lagoons on the Mitchell and dry swamps. Long pendant flowers, and spreading foliage. The bark is cut up in small pieces, and hammered on a stone fine and small; placed in the water, fish are said to eat of it and die.

11. *Barringtonia careya*. Roxburgh.—The bark of the stem is used to poison fish, and also the roots of the tree, by the blacks on the Lower Flinders, though not used on the Mitchell. "James Morrill" mentions that the blacks on the Lower Burdekin used the bark of the stem to poison fish in fresh water, and the bark of the root in salt water.

12. *Plectranthus congestus* (*Labiata*).—Native name on the Mitchell, Kar-kar. Used as medicine, leaves and stems.

13. *Pterocaulon glandulosus*.—A strong-smelling herb; grows on ridges on the Mitchell, 2 feet long. Leaf serrated, scabrous, decurrent, used by crushing up in water, and drinking for sickness.

14. *Gnaphalium luteo-album*. Linne.—Native name on Mitchell, Kar-Kar. Annual herb, 15 inches high, found in rivers or scrubs; soft velvety feel; leaf long, narrow, sessile, obovate, opposite; small yellow flowers. Used as a drink after bruising in water.

15. *Heliotropium ovalifolium*. Forsk. F. Aus., vol. iv.—The general name for small medicinal herbs on the Mitchell is *Kar-kar*. Herb with small yellowish flowers, on axillary branchlets; leaf alternate stipulate, soft and bluish. Grows 2 feet high in the bed of the Mitchell; common. Used as a wash for the head and body, and taken internally for fevers.

16. *Moschosma polystachium*. F. Aus., vol. v, p. 75.—Native name on the Mitchell, *Jin-jikky*. An erect, slender, much-branched annual, 2 to 3 feet high, slightly pubescent, stems acutely four-angled. Found on the Flinders and Mitchell Rivers in good soil; used as a medicine by bruising up in water and drinking for fevers and headache; strong smelling.

17. *Drosera Indica*. Linn.—Grows in moist places in the Mitchell, and used by the young blackfellows or boys to make their whiskers grow, by rubbing on their face.

Plants principally for Manufactures.

18. *Hibiscus panduriformis*.—Native name on the Mitchell, *Bee-allo*. A fibrous plant; grows to 10 feet high; scabrous and rough. The bark is stripped, cleaned, and twisted into cordage for bags, nets, and twine; found on the Mitchell.

19. *Psorelea archeri* (*Leguminosæ*).—Native name on the Cloncurry, *Wommo*. Annual plant found on the Cloncurry where water has flowed, or near creeks; 2 feet high; leaf acute, serrated, opposite, dark green. The plant is pulled up, soaked some hours in water, and left to dry, when the bark peels off, and is kept for use, for making cord, nets, and twine.

20. *Erythrophleum Labouchevii*.—Native name on the Mitchell, *Ah-pill*. Called ironwood tree; found in sandy forest country from Cooktown to the Flinders. The wood is dark red and very hard, and is used for *wommeras* principally, sometimes throwing-sticks and points of reed spears.

21. *Thryptomene oligandra*. F. v. M., Fragm., 1-11.—Native name on the Mitchell, *O-may*. A small tree; grows in sandy country on the Mitchell, Gilbert, and other rivers in North Queensland, often near swamps; small white flowers growing among the leaves at the extremities of the branchlets; wood hard and fine, used for the points of reed spears.

22. *Acacia homalophylla*.—Native name on the Cloncurry, *Woong-arra*. The gidya tree, a kind of myal without the drooping foliage; wood dark and very hard, violet scented; grows in ridges on the Cloncurry. The wood is used for boomerangs and spears; some spears are found 14 feet long, made of one straight piece of solid wood without a flaw or knot.

23. *Corypha australis*.—Cabbage-tree palm; grows on the

Endeavour and Normandy Rivers in rich scrub soil. The wood is split for spears, mostly spear-heads for barbed reed spears.

24. *Clerodendron floribundum*. R. Bn.—Native name on Cloncurry, *Thurkoo*. Shrub about 4 feet high on the Upper Cloncurry; wood soft and pithy; broad shining leaf, on a long petiole. Two dried pieces of this wood are used for making fire drills with.

25. *Ventilago viminalis*. Hooker.—Native name on the Cloncurry, *Thandorah*. Shrub or tree, about 15 feet high; long pendent foliage; leaves 3 to 5 inches long; wood soft and yellow; crooked and straggling growth; very common all over North Queensland; two pieces of dried branches are used for fire drills; it is the most commonly used.

26. *Sesbania aegyptiaca*. Person.—Native name on Cloncurry, *Ngeen-jerry*. Called peabush, an annual, with erect stem and spreading branches; from 5 to 7 feet high; grows in the beds of creeks and on plains on the Cloncurry; used for fire drills as the two former, also for ends of reed spears.

27. *Psychotria* sp.—Shrub, found on the banks of the Mitchell River and near scrubs. Wood soft and smooth bark; used for fire drills; preferred of all wood for the purpose.

28. *Panicum leucophanum*.—Grass found on the plains of the Cloncurry, about 12 inches high, in strong bunches with matted roots; leaves short and broad, partly sheathed. The fibre of the leaves is used for soft twine and thread, being twisted while green.

29. *Panicum trachyrrachis*.—Native name on the Mitchell, *Oo-kin*. A tall swamp grass, grows 6 to 8 feet high; straight stem; numerous spreading branchlets covered with fine reddish seeds. The fibre is peeled from the under-surface of the broad leaves by breaking the leaf across with the fingers and drawing the fine string of fibre downwards, twisting them at the same time; used for twine for bags and fine nets.

30. *Homodorum coccineum*. F. Aus., vol. vi.—Native name on the Mitchell, *On-tho*. Annual herb, with scarlet roots and long fleshy leaves, 1 to 2 feet long; grows in poor sandy country on the Mitchell and over North Queensland. A fine, strong fibre is found in the tough leaves, which is made into close fine bags for straining the *karro* meal through when washing in the *koolimans*.

31. *Abutilon otocarpum*. F. Aus., vol. i, p. 202.—Native name on the Cloncurry, *Ballan-boor*. Annual, with erect stem about 7 feet high; leaves soft, acute, serrated, heart-shaped; grows in the Cloncurry. The bark is stripped off and scraped clean with mussel-shells, and used for strong cord for netting for game.

32. *Sterculia* sp.—Native name on the Cloncurry, *Eendurah*. Called *Kurrijong* tree, a tall shady tree. The seed pods are

eaten roasted; the inside bark is used for strong cord for wallaby nets and lines, &c.; the wood is made into shields.

33. *Eucalyptus tetradonta*.—The inside bark is stripped clean and made into troughs, tied up neatly at each end, and fixed with a wooden skewer, for washing the *karro* meal in. Very tough and pliable; some of them are 4 feet long.

34. *Cyperus* *sp.*—Native name, *Thubbin* on the Cloncurry. Grows round the edge of waters with erect stem, 3 feet high. Used by the children to play with as spears in the camp; also the winged seeds of *Atalaya hemiglauca*, called the white-wood tree, are used to play with by twirling them in the air.

35. *Typha angustifolia* (*Typhaceæ*). F. Aus., vol. iii, p. 159. —A common reed or rush growing in still water; erect stem, with soft brown cylindrical seed head or flower; found in all waters. Stem used for reed spears; leaves and roots also edible; grows on the Mitchell.

APPENDIX I.

VOCABULARY OF ABORIGINAL WORDS.

English.	Darling River, Bourke, N.S.W.	N. S. Wales, Bellinger River.	G. of Carpentaria, Myappe, Lower Flanders.	G. of Carpentaria, Gilbert River.	Mitchell River, Koograminy.	Saxby River, Mycockon.	Burnett and Wide Bay, Goonibie.
1. Father ..	kambi-ga ..	barle ..	moochere ..	you ah ..	athim ..	moocho ..	baboon.
2. Mother ..	makter ..	mamme ..	yakeroo ..	nellah ..	amunga ..	yakeroo ..	ab eng.
3. Sister ..	woo-tooka ..	jindah ..	kool-amoo ..	jane goor ah ..	athectha ..	kool amoo ..	duabeen.
4. Brother ..	kook-ooteha ..	kog-goo ..	ngah-bone ..	koth ah ..	moko ..	ngabone ..	deebat.
5. Elder brother ..	bool-ooteha ..	koggo ..	batch i moon ..	jo an jo ..	athil ..	koolamoo ..	nina.
6. Widower ..	karnde-watheroo ..	boorgoon ..	warrego-milbo ..	ragatah ..	—	mondurah ..	gungee won.
7. Widow ..	boola - ngare - mulla.	koolomby ..	koom-ilbo ..	non come ah ..	—	mintherah ..	boolon.
8. Fatherless ..	ngartia com- bitcha.	millegun-beewy ..	mootche-thoon ^g go.	you am ah ..	thiberung ..	goonyungo ..	dool gun dum.
9. Motherless ..	ngartia - appa - morne ..	nugunga beewy ..	wandalbo ..	nal am ah ..	thumerung ..	yakor theongo ..	abbaubie.
10. One whose child is dead	ngare-gutchingo ..	boorah - yuunde beewy.	—	pey yah ..	—	goitho moo- chon.	cockore mem.
11. One whose sister is dead	booka-molly-cha ..	an-yuunde ..	—	at munga-nonga ..	—	thamus mootch- ere mirreban ..	dubeen gun- kewon.
12. Uncle (fa- ther's brother)	ngare-booka ..	goocha wurle.	ngammin ..	my yah ..	thikky ..	ngammin ..	yunnie.
13. Aunt (fa- ther's sister)	wak-itcha ..	kowah ..	thoo rin ..	my yah ..	amunga ..	boolon ..	yurerie.
14. Nephew ..	me-chooteha ..	barboon ..	bitah a moon ..	yeen angoorah ..	moko ..	ngunbun ..	barrungun.
15. Niece ..	king-kootcha ..	kowah ..	gooth a thoo ..	yeen angoorah ..	—	ngial ..	baralgun.
16. Husband ..	wok-kootcha ..	barba ..	bunjil ..	notha ..	on yune ya ..	ngathes ..	molinnie.

APPENDIX I.—VOCABULARY OF ABORIGINAL WORDS—continued.

English.	Darling River, Bourke, N.S.W.	N. S. Wales, Bellingen River.	G. of Carpentaria, Myappe, Lower Flinders.	G. of Carpentaria, Gilbert River.	Mitchell River, Koogominny.	Saxby River, Mycelon.	Burnett and Wide Bay, Goonah.
17. Wife ..	ngarupa ..	gindyah, goorai ..	ngathua ..	teenyah ..	a thosa ..	thanather ..	mollein minkin.
18. Son ..	weem-burra ..	geebah anyu- unde.	bin jaumo ..	yan mangoorah ..	a willing ..	ngunban ..	guppore.
19. Daughter ..	weem-burra ..	noogean ..	ngum ban ..	kolyorah ..	alalimbine ..	ngunban ..	newengin.
20. Grandfather (father's fa- ther).	math-etcha ..	ngadje ..	mootchoo ..	owan atha ..	athem ..	boobo-bobbin ..	milberan.
21. Grandmo- ther (father's mother)	kon-necha ..	kom-me ..	mootcho thoön- go	mema ..	anwaga ..	kommin ..	goon yew.
22. Man ..	goolta ..	neegah ..	yagoyne ..	spmah ..	jinme and parma.	bunjil ..	geebe illa.
23. Woman ..	burraka ..	numme ..	mootho-mootho ..	branburra ..	aruntha ..	bunya ..	geen ulla.
24. Boy ..	gitch ingo marle ..	gubah ..	hetchingoloo ..	oolmyah ..	angannung ..	buchingore ..	kokore ulla.
25. Girl ..	goon bulka pulla.	undalgino ..	goothathoo ..	jooreamook ..	amulla kul ..	munkine ..	yarnun.
26. Old man ..	ol manda murta ..	koi yah ..	mos ..	dougeinyah ..	olpa ..	mos ..	mobbore bun- gole.
27. Old woman	kondineja bur- ruka.	woneon jiggun ..	mootho-mootho ..	romurah ..	aruntha ..	warnooora ..	goreku urekul.
28. Unmarried girl.	ngartha ween butcha.	koola karre ..	ngathes-thoongo ..	quilamah ..	angunnung ..	yeubo.	yore.
29. Unmarried man.	martoo ..	koola karre ..	bunyah-kullah ..	teen yamah ..	angunnung ..	yabberin ..	guarm bulkul.
30. Summer ..	bootche ..	wec joom ..	woolbarry ..	nyanquittah ..	atha ..	boobara ..	tarra.
31. Winter ..	mokoroo ..	mokoor ..	yerrungah ..	allwarrah ..	olvargo ..	koobinburrah ..	

APPENDIX I.—VOCABULARY OF ABORIGINAL WORDS—continued.

English.	Darling River, Bourke, N.S.W.	N. S. Wales, Bellinger River.	G. of Carpentaria, Myapye, Lower Flinders.	G. of Carpentaria, Gilbert River.	Mitchell River, Koomintny.	Sarby River, Mycelon.	Burnett and Wide Bay, Goonine.
32. Sun..	yuko ..	ngam ..	binjammo ..	nyanah..	atha ..	binjammo ..	bickey.
33. Moon	bitola ..	kee tyne	kog arah ..	kenah ..	thargun ..	wannaungerry ..	barboon.
34. Stars	burl-i ..	windah..	jinby ..	allah ..	ilbanung ..	jinbo ..	barbun bulun.
35. Cloud	in da ..	karrah ..	worool ..	moreha..	ool mallo ..	winango ..	wolol.
36. Heavens	karra bino	—	marra-marra	londorah	ingathy ..	wecallah ..	bookeon.
37. Rain	mokora..	kallone..	vindune ..	woon juneoo	okno ..	woonjune ..	eurong.
38. Heat	bootehe	woo jeom tarre	yango mi mi	peereha ..	atha ..	yang o mi mi..	guiekun.
39. Cold	mokoroo	mokoor..	yerringe ..	karah ..	olooaga ..	yerrunga ..	ditill borun.
40. Hill..	murtoo..	theoloom	munde ..	irongull ..	olgoon ..	moorko ..	keena.
41. Sand	korinyah	gittoorah	mun kallah	galah ..	oogah ..	num kullo ..	getta.
42. Land	murnde	wood jarrah	mug geer ..	bolbah ..	ogu ..	ngoorah ..	yaron.
43. Stone	yerruda..	moonoom	munde ..	rongal ..	ol gone ..	minde..	duckey.
44. Water	ngoko ..	ngaroo ..	yapoo ..	acknah..	okno ..	kamno ..	koong.
45. Sea ..	kargul ..	yapoo jukn	yapoo jukn	carangah	—	kamno guleba	wool koong.
46. Tree	gerah ..	—	goonga..	koarah..	okoo ..	keonkah ..	—
47. Canoe	bool yango	walloo ..	beembah	noorook	oongarrare	ngunkore ..	goondool.
48. Fish	woonga, marre	—	balby ..	oyah ..	ooyen..	balby ..	gorool.
49. Grass	moordtho	boockouroo	yalkoyne	gwyuah	ookin ..	guthier ..	baro.
50. Lily	naiye ..	—	thandoo	tarokita	thoogoon	koonkoll ..	mulkins.
51. Lily-roots	nginde ..	—	thoolambool	ooyeah	irpoo..	thando ..	yewrool.
52. Dog..	kulle, mulbhara	wahrudje	yumbe ..	twengah	oota ..	yumbe ..	mirru.
53. Kangaroo	murra booga	ngooogo	matchimbah	orutha ..	inna ..	korroo ..	mur re.
54. Wallaby	marringa	booleen..	—	polapmerah	parley..	kiakulko	yar goon.
55. Kangaroo-rat	goote ..	kooloogah	jiggul ..	korah ..	illengore	jiggul ..	geenun.
56. Bandicoot	booriginga	yuloor ..	woone ..	outulba	omun ..	woone..	woon kore.
57. Opossum	yerrindure	goorudji	kogoyue	wombah	oolun ..	kogome ..	koroi.

APPENDIX I.—VOCABULARY OF ABORIGINAL WORDS—continued.

English.	Darling River, Bourke, N.S.W.	N. S. Wales, Bellinger River.	G. of Carpentaria, Myapye, Lower Flinders.	G. of Carpentaria, Gilbert River.	Mitchell River, Koogominny.	Sarley River, Myecolon.	Burnett and Wide Bay, Gooline.
58. Snake ..	mul kirre ..	choom bal ..	thangeer ..	mel corah ..	ooloor.. ..	jinure.. ..	woonka.
59. Emu ..	kulthe ..	gougungan ..	junkerberry ..	near oolah ..	a koon ..	junkerberry ..	moree.
60. Native cat ..	kinyah ..	barlin gin ..	— ..	bamboorah ..	il pair.. ..	jiggerdah ..	ginying.
61. Squirrel ..	pelah ..	barago ..	— ..	lingunanyah ..	olmb.. ..	mondane ..	amboor.
62. Flying-fox ..	karkoola ..	wallimbah ..	moong ore ..	mangwatlah ..	imbul.. ..	moongore ..	geraman.
63. Native bear ..	wottoo ..	toon gerre ..	— ..	moorgotoyeh ..	— ..	— ..	koola.
64. Rat.. ..	wonga are ..	jinmo ..	karooaga ..	korah ..	orool ..	janna thulla ..	moobar.
65. Spar ..	karkaroo ..	cunmi ..	goongan ..	aloh ..	alka ..	goongan ..	gunna.
66. Boomerang.. ..	wonna ..	toorah.. ..	yalker berry ..	ningyellow ..	ombeen ..	yalkerberry ..	bulkun.
67. Shield ..	bia* willy ..	kougun.. ..	yamboro ..	balta ..	goolinarry ..	yamboro ..	hellaman.
68. Nullah ..	thurtoo, birra ..	koornun ..	thamballah ..	nyah ..	ilm bil ..	thambullo ..	kootla.
69. Knife ..	ngiba ..	kullinjah ..	— ..	kau karie ..	beelbarraro ..	beelbarro ..	duckey.
70. Tomahawk.. ..	Thoro mia ..	woo gurrah ..	marreah ..	toolcarah ..	ekun ..	jookah doon- gab ..	mogene.
71. Water-kooli- man.	ngoko mirra ..	koo loon ..	ngoan gure ..	— ..	oonde.. ..	ngoombore ..	dun gin.
72. Yam-stick ..	kuruika.. ..	kunnai ..	bagah.. ..	anah ..	anna ..	largo ..	gunna.
73. Fish-net ..	mulka ..	ngoo line ..	moonah ..	kolanbah ..	onyin.. ..	moonah ..	bun gille.
74. Fish-spear.. ..	kalkaroo ..	waran ..	yalla thuntha ..	olgorah ..	seche ..	yalla thunna ..	tungoo.
75. Dilly-bag ..	tille cha ..	bag (native) ..	— ..	karechicka ..	oolana ..	booyan ..	boonte.
76. Big ..	woorto.. ..	boor wy ..	wine yeer ..	kazenjah ..	ingum.. ..	wine yeer ..	goorgiona.
77. Small ..	kotchaloookoo ..	thoon noi ..	jallo ..	duarah.. ..	oko ..	jallo ..	temorrow me.
78. Good ..	kine gallah ..	dur roy.. ..	cotchin.. ..	manyarah ..	oong ne ..	goochin ..	kalangor.
79. Bad ..	thoola kulle ..	yoongo.. ..	mathee.. ..	janayah ..	intlie ..	mathee ..	waltara.
80. Far away ..	boorre cherry ..	mallee dah ..	wooloo ..	tungah.. ..	eggoolbun ..	woolo.. ..	woonungie.
81. Close up ..	thile pa ..	tally jah ..	beerha ..	roandorah ..	orgooyo ..	beerah ..	kulla beerun.

APPENDIX I.—VOCABULARY OF ABORIGINAL WORDS—continued.

English.	Darling River, Bourke, N.S.W.	N. S. Wales, Bellinger River.	G. of Carpentaria, Myapoo, Lower Flinders.	G. of Carpentaria, Gilbert River.	Mitchell River, Koogiminy.	Saxby River, Myclood.	Burnett and Wide Bay, Goonine.
82. Strong	mitchara ..	tarroo ..	wineyer ..	tackarah ..	arya ..	worrugin ..	gun kun.
83. Weak	ninditcha ..	yoongo ..	mathes..	morah..	alungun ..	barbul ..	duppoorwore.
84. Tired	thoolpa ngappa ..	tharrahooney..	lizreke ..	yengarhangah..	anyula ..	like ..	dukkore-unke- won.
85. Hungry	yarago ..	minandy ..	bool ngingo ..	mererah ..	arage ..	boolney ..	kargungu ba- lone.
86. Thirsty	agoko walta appa	balloon gin ..	yarpo ..	benah ..	inhay ..	yurby..	dookore-unke- won.
87. Dead	books, mala ..	walling..	mootche ..	areubarah ..	ilbalby..	mootchon ..	balome.
88. Sick	altha ..	tandorey ..	jillingo ..	jelah ..	ilme ..	mirree ..	pikey.
89. Sores	kallala appa ..	tandorey ..	cookee ..	peua ..	annul ..	cookee or kog- gee	team.
90. Fat	keengtha ..	marome ..	thango wineyer	oon gah ..	og nee..	konneer ..	marome-goot- chee.
91. Thin	ninditcha ..	thoonoi..	mathes..	warah ..	inhes..	yallarebe ..	cokekore.
92. Tall	barlaroo ..	yoocoo ..	ngural ..	alperah ..	oolbun ..	needun ..	garow a run.
93. Short	moreo, kallo ..	therry kum ..	theggo ..	sanah ..	ootulka ..	thaggo ..	thalbor.
94. Left-handed	yanguteho ..	wargoynie ..	wargoynie ..	wanjah..	akoom..	wargoynie ..	warum and wotunga.
95. Lane	mik itcha ..	teena tandorey	lillin jingo ..	arataseena ..	alo garago ..	lillinke ..	dinong.
96. Blind	boor itcha ..	mill yoongo ..	mille kundah ..	groomah..	ammunaleo ..	warra, moochio ..	mill bong.
97. Deaf	yurè mukhoo ..	ngarlgan yoongo	wamnah ..	coyah ..	enullo..	yalah ..	beenunggloom
98. Tongue	theran ye ..	ngarwah boowy	ngoolan ..	derah ..	ilping ..	ngoolan ..	toonoom.
99. Teeth	ngundee ..	teerah ..	yarehine ..	eers ..	ungool ..	yarah ..	dunka.
100. Ear	yurè ..	ngarlgan ..	beenar ..	namoolah ..	enar ..	beenah ..	beenung.

APPENDIX I.—VOCABULARY OF ABORIGINAL WORDS—continued.

English.	Darling River, Bourke, N.S.W.	N. S. Wales, Bellinger River.	G. of Carpentaria, Myappe, Lower Flinders.	G. of Carpentaria, Gilbert River.	Mitchell River, Koompinny.	Saxby River, Myecolon.	Burnett and Wide Bay, Goonine.
101. Foot ..	tinna ..	teenah ..	jannah ..	eitna ..	anul ..	jannah ..	dinong and teena.
102. Nose ..	mino, moloo ..	tingan ..	goin geen	oortala ..	amoo ..	koonyen ..	mooroo.
103. Eye ..	mekoo ..	pill ..	millee ..	da ..	emun ..	mille ..	me and mil.
104. Hair ..	thartoo ..	marrah ..	warrumbo ..	kongah ..	allun ..	warrumbo ..	karn.
105. Head ..	tharturloo ..	karloo ..	ngun kool	aga or taga ..	amboogo ..	gunther ..	karn.
106. Bald head ..	bunta arle ..	marrah beewy ..	goonarry ..	mara ..	amboogo parina ..	giyun ..	karn belore.
107. Grey head ..	goorah arle ..	kereen green ..	joongal ..	kotinyah ..	alpa ..	booklin ..	gilkun gale.
108. Neck ..	bunbah ..	woo roo ..	ngingin ..	della ..	otil ..	mumna ..	que kore.
109. Sitting down	neenga jerry ..	nglangen ..	yeune ..	arana ..	injeenga ..	yeenah ..	bogie nenarn.
110. Walking ..	tharneen jerry ..	yarnje ..	wabby ..	aran koya ..	athoorebul yepul ..	wabbah ..	yenna.
111. Running ..	kulyer arkala ..	billaguren ..	wangalbo ..	arocha ..	inbul ..	bunkah ..	bunquar.
112. Standing still	bootoocha tharry ..	teenah mill mogor ..	batchingo ..	aralooina ..	anarny ..	tharry tharry ..	nenarn bulba.
113. Fighting ..	thurtoo bulka ..	boomeri ..	larra thulbo ..	koortininda ..	cleerkilla ..	boonchaby ..	pikie.
114. Swimming ..	ata kinna ..	bowgen ..	bimne ..	alkaninda ..	ong a rary ..	beemingo ..	wool ine.
115. Diving ..	youlp oroo ..	boongeen ..	thoorke ..	warinda ..	koolabun ..	thurkingo ..	narn gwarry.
116. Corrobory ..	marne buknillo ..	yonnarro illewa ..	karrum bingo ..	wetwanga ..	irpooroory ..	yadthan ..	arrieman.
117. Afraid ..	ninna ..	warn beeng ..	—	marpmar ..	ilman ..	lowee ..	witchim.
118. To cry ..	ngoolya ngulla ..	doo wong ..	barringo ..	aira ..	ogo athathy ..	barry ..	nollayun karlin
119. Laughing ..	whoorah ..	toolooing ming ..	jingo ..	gaira ..	ceengal ogo ..	jinke ..	wathley.
120. Beardless ..	Kinda ..	ngoohe beewy ..	yanbah kullah ..	pergamo ..	longy ..	yanba gooncha ..	woka moonyin.
	ngarte whakka bulke.				aworko karry ..		

APPENDIX I.—VOCABULARY OF ABORIGINAL WORDS—continued.

English.	Darling River, Bourke, N.S.W.	N. S. Wales, Bellinger River.	G. of Carpentaria, Myerpe, Lower Flinders.	G. of Carpentaria, Gilbert River.	Mitchell River, Koo-gominy.	Saxby River, Myecolon.	Burnett and Wide Bay, Goonine.
121. Whiskers ..	b a l o g r o o whakta bulke	ngoohe ..	yanbah ..	perah ..	aworko ..	yaubah ..	yarra moonyin.
122. Long time ago.	konding indo ..	thalloom bo ..	wooroo wooroo wabingo	rowama ..	a, woth, on ..	yatcharah ..	moony nuntoon.
123. Yesterday ..	karo to ..	kooroo lo ..	birree gool ..	lemootminjuh ..	a, numba ..	birreegool ..	balloloom.
124. To-morrow ..	warmbe ..	kooroo lo ..	birringah ..	salmoorah ..	o, ng ..	birringah ..	marboono.
125. Rainbow ..	mondarn burra ..	keegoin ..	— ..	tolpah ..	o, yuro ..	— ..	karlewa.
126. Wind ..	yurto — ..	kooreen ..	kooben ..	clenarah ..	e, thung ..	kooben ..	boorun.
127. Falling star ..	pulle — ..	bocong meen ..	booringo jinbe ..	kanda ..	a, roore ..	jinbe booringo ..	
128. Carpet- snake.	piddaroo ..	choomharl ..	kooremah ..	ongah ..	al, kin ..	kooremah ..	wongi.
129. Black snake	toopoo ngarl ..	toongoon ..	thung eer ..	ombalah ..	a, loof ..	kurthulbun ..	moeloo.
130. Death adder ..	numbo nineyah ..	tarin been ..	bartimo ..	— ..	a, joel ..	— ..	monulgum.
131. Iguana ..	burma thukolbo ..	wirregah ..	yang oolah ..	roonjurah ..	geo, thil ..	yang, o, lah ..	—
132. Turtle ..	boomalla booka ..	rigoonah ..	moyah gutha ..	betorgah ..	ing, o ..	moya gutha ..	milbe.
133. Black duck ..	mingarra ..	wurrah di ..	karabab ..	orecks ..	o, noo, gi ..	karabab ..	gnah.
134. Whistling duck.	multa ..	— ..	ngulla wal ..	cherreechur ..	a, murre ..	wallatho ..	nulbar.
135. Diver or darter.	bowen indaja ..	koinboor ..	yalke ..	tareh ..	a, wathal ..	yalke ..	guttunda.
136. Pelican ..	ngunkaroo ..	— ..	thalke boon ..	arthoorah ..	athooro ..	thoong allinje and thoong aberry.	goolooluu.
137. Crow ..	kurkoo ..	wargua ..	thoonga berry ..	gwa wah ..	atha ..	warmoorine ..	—

APPENDIX I.—VOCABULARY OF ABORIGINAL WORDS—continued.

English.	Darling River, Bourke, N.S.W.	N. S. Wales, Bellinger River.	G. of Carpentaria, Myappe, Lower Flinders.	G. of Carpentaria, Gilbert River.	Mitchell River, Keograminy.	Saxby River, Mycoolan.	Burnett and Wide Bay, Geonine.
138. Brown hawk	wharkoo	boogah jaggee	walbin garrah	koorageja	oromoko	kiteli a berry	—
139. Eaglehawk	warreko	ngum gah	koore thilla	toomagutha	oromoi	janna ugalh	bootha.
140. Pigeon	putoolah	bar bungti	booran booran	apenah	airjil	boowally	woonkullun.
141. Horse	walpa litcha	ngah	yarramunah	tyerah	thiary	warna, na	yarraman
142. Gun	murkindo	beel	bully bully	bully bully	burra, peewoh	kooolomboro	revolver - bette- lan.
143. Axe	toomeyah	wokarah	juko doongah	paimah	joolkoro	juko doongah	bulia deel.
144. House	koade	nghorrah	goobo	rawyah	goongarry	coobo	durah.
145. Thunder	birndee	booroomgi	yanberry	malleecka	opoolpy	baringo	booroomgine.
146. Lightning.	meendee	munongi	boonchilly	chilla	cothia	yanberry	tulberalbe.
147. Rain	mutkarrah	gooleon	woonjone	jane woonja	og, no	woon jone	curong.
148. Red (colour)	ngarl iria	morroonorroo	batha batha rug gun	—	o, neel	barroul	butha butha.
149. Blue	ngoolya binna	goroo	gilehun	boolpol	ok, yo	marchin	bookun.
150. Green	noomba irka	karra bun	gilehun	koona	atehooche	gilehun	beewon.
151. Black	koek irka	koaroo	marchin	boolpah	okyo	marchin	bookin.
152. White	boota	—	boolbo	poerah	eral	boonamoo	bootha.
153. Smoke	boopalla borroo	foom	koomire	coekun	akon	ko, merry	woloi.
154. Hail	warloo	wardee	—	ale nekina	—	oorg boogerry	—
155. One (1)	ngitela	karroogun	kooroi	noolah	apul	wonka	karleme.
156. Two (2)	bulls	bullaree	bullagarrah	goolah	yirupa	bullagarrah	bulia.
157. Three (3)	bulia ngitela	bullaree karroo- gun	mathingoolah	cooringah	arulko	goobarrah	bupoorapa.
158. Four (4)	bulia bulla	bullaree bullaree	goobarrah	waka	arbunij	bullagarrah, bullagarrah	goore kunda.
159. Five (5)	yenta mirra	—	—	yoorocka	arbunij	—	dargilnool.

APPENDIX I.—VOCABULARY OF ABORIGINAL WORDS—continued.

English.	Darling River, Bourke, N.S.W.	N. S. Wales, Bellingier River.	G. of Carpentaria, Myappe, Lower Flinders.	G. of Carpentaria, Gilbert River.	Mitchell River, Kooguminy.*	Saxby River, Myecoolon.†	Burnett and Wide Bay, Goonine.
160. A good many	ngoolatta bulla bulla	woomargah ..	gootcholoo ..	wallcorah ..	ameengum ..	gootchalo ..	..
161. A round ball	— ..	toomby.. ..	ngoodoo ..	najab ..	— ..	ballambo ..	wonto.
162. White fellow	— ..	yerallee ..	barrago ..	oinyah ..	— ..	— ..	muthar.
163. White woman	— ..	wyoomun ..	bunyah.. ..	banber oinyah..	— ..	— ..	keen.
164. To drink with the hand	— ..	malung ngumbe ..	nalla roongo ..	ooranda ..	— ..	— ..	pirro thugga.
165. To steal ..	— ..	woroo goomung ..	bargaribo ..	walangoonda ..	— ..	— ..	crammer, ? woora.
166. To call out	— ..	king garling ..	barringo ..	chaminda ..	— ..	— ..	gunkulewa.

* Language of this tribe called *atookoot*; sub-tribe, *jinmy*; locality, north of Palmer River, Queensland.

† Language of Myecoolon nearly similar to Lower Flinders Myappe, only put down to show the variations; the Myecoolon words were given by a more intelligent and reliable black than the Myappe. "Hector," the former (Myecoolon), reared up with whites. "Jacky," the Myappe, was stupid and hard to understand.

APPENDIX II.

Remarks on the Class Systems collected by Mr. Palmer.

By A. W. HOWITT, F.L.S.

THE class divisions which Mr. Palmer has collected are some of the links of a chain which extends across the Australian continent, binding together the various Australian aboriginal communities. The connection of these different class systems with each other is not at first sight apparent, unless when, as in the cases given by Mr. Palmer, they are accompanied by direct evidence from native informants that two or more of them are regarded as the equivalents of each other. When, however, a greater number of class systems are collected and compared systematically with each other, their connection becomes more evident, and the dialectic identity or the equivalence of names may often be established.

In order to show this, as regards the classes given by Mr. Palmer, I propose to interpolate in his series certain class-systems which I have obtained from other correspondents, and thus to render the chain somewhat more connected and complete:—

No. 1.—*Kamilaroi Tribe.*¹

Two primary classes.	Four sub-classes.	Totem names.
Dilbi {	Mūri { Kūbi }	Kangaroo, Opossum, Bandicoot, Iguana, Black Duck, Eagle- hawk, &c.
Kūpathin {	Ipai { Kumbo }	Emu, Carpet-Snake, Black Snake, Red Kangaroo, Frog, Codfish, Wallaroo, &c.

¹ Established by the inquiries of Mr. C. E. Doyle, late of Kunopia, N.S.W.

No. 2.—*Kiabara Tribe*.¹

South of Maryborough, Queensland.

Two primary classes.	Four sub-classes.	Totem names.
Dilebi (Flood water)	<div> <div>{</div> <div>Baring (Turtle) ..</div> <div>Turowine (Bat) ..</div> <div>}</div> </div>	?
Cubatine (Lightning)	<div> <div>{</div> <div>Bulcoin (Carpet-Snake)</div> <div>Bundah (Native Cat)</div> <div>}</div> </div>	?

No. 3.—*Kainmārbūra Tribe*.²

Near Rockhampton, Queensland.

Two primary classes.	Four sub-classes.	Totem names.
Yūngerū	<div> <div>{</div> <div>Kūrpāl</div> <div>Kūialla</div> <div>}</div> </div>	Eaglehawk. Laughing Jackass.
Witterū	<div> <div>{</div> <div>Karilbūra</div> <div>Mūnal</div> <div>}</div> </div>	Sand Wallaby, Clearwater, Curlew, Hawk.

¹ Communicated by Mr. J. Brooke, N. M. Police, Queensland.² Communicated by Mr. W. H. Flowers, Rockhampton, Queensland.

No. 4.—*Wakelbura Tribe*.¹

Elgin Downs, Queensland.

Two primary classes.	Four sub-classes.	Totem names.
Mallera {	Kurgila { Banbe }	Plain Turkey, Small Bee, Opossum, Kangaroo.
Wüthera {	Wüngo { Obü }	Emu, Carpet-Snake, Large Bee, Black Duck, Wallaroo.

No. 5.—*Balonne River Tribe*.²

Two primary classes.	Four sub-classes.	Totem names.
————— {	Urgilla { Unburri }	—————
————— {	Wüngo { Obur }	—————

No. 6.—*Ringa-Ringa Tribe*.³

Burke River, Queensland.

Two primary classes.	Four sub-classes.	Totem names.
————— {	Goorkela { Banbury }	Turkey, Emu, Iguana.
————— {	Wonko { Coobooroo }	Carpet-Snake, Death Adder, Native Cat, Kangaroo, Rat.

¹ Communicated by Mr. J. C. Muirhead, Queensland.² See p. 306, *ante*.³ Communicated by Mr. Jno. Lett, Burke River, Queensland.

No. 7.—*Kanandabūri Tribe*.¹

Cooper's Creek, Queensland.

Two primary classes.	Four sub-classes.	Totem names.
Yūngo {	_____ } _____ }	Kangaroo, Iguana, Dog, Carpet-Snake, Crow, Frog, Rat, &c.
Mattara {	_____ } _____ }	Emu, Opossum, Brown Snake, Frilled Lizard, &c.

No. 8.—*Dieri Tribe*.²

East Side, Lake Eyre, South Australia.

Two primary classes.	Four sub-classes.	Totem names.
Kararū {	_____ } _____ }	Kangaroo, Carpet-Snake, Native Companion, Rat, Frog, Crow, &c.
Matteri {	_____ } _____ }	Eaglehawk, Emu, Dog, Lizard, Cormorant, &c.

No. 9.—*Ta-ta-thi Tribe*.³

Riverina, New South Wales.

Two primary classes.	Four sub-classes.	Totem names.
Kilpara {	_____ } _____ }	Hawk, Lizard, &c.
Mūquara {	_____ } _____ }	Emu, Duck, Bush Rat, &c.

Mr. Cameron states that Kilpara is the equivalent of Kubi-Muri, and Mūquara of Ipai-Kumbo. The next tribe to the north-eastward of the Ta-ta-thi was one having the Kamilaroi class names.

¹ Communicated by Mr. W. O'Donnell, Cooper's Creek, Queensland.

² Communicated by the Rev. H. Vogelsang, Kopperamanna, South Australia.

³ Communicated by Mr. A. L. P. Cameron, Mulurulu, N.S.W.

No. 10.—*Yerrunthully Tribe*.¹

Flinders River, Queensland.

Two primary classes.	Four sub-classes.	Totem names.
_____ {	Koorgielah.. .. } Bunbury }	Plain Turkey, Native Dog, Carpet-Snake.
_____ {	Woonko } Coobaroo }	Emu, Brown Snake, Whistling Duck.

No. 11.—*Mycoolon Tribe*.¹

Flinders River, Queensland.

Two primary classes.	Four sub-classes.	Totem names.
_____ {	(M) Jimalingo .. } (F) Goothamungo } (M) Yowingo .. } (F) Carburungo .. }	Plain Turkey, Eaglehawk, Whistling Duck.
_____ {	(M) Bathingo .. } (F) Munjinga .. } (M) Marringo .. } (F) Ngarran-ngungo }	Carpet-Snake, Iguana, Black Duck.

No. 12.—*Koogo-Bathy Tribe*.²

Mitchell River, Queensland.

Two primary classes.	Four sub-classes.	Totem names.
_____ {	Barry } Mungillo }	Yam. Grass.
_____ {	Ararey } Jury }	Carpet-Snake. Fruit.

¹ See p. 302, *ante*.² See p. 303, *ante*.

No. 13.—*Kombinegherry Tribe.*¹

Bellinger River, New South Wales.

Two primary classes.	Four sub-classes.	Totem names.
_____	{ <div> (M) Kurbo .. (F) Kooran .. (M) Marro .. (F) Kurgan .. </div> }	_____
_____	{ <div> (M) Wirro.. .. (F) Wingan (M) Wombo () Wirrikin </div> }	_____

The connection and equivalence of these class systems is provisionally established by—

- (1) The direct testimony of native informants, as in Nos. 1 and 9, and 11 and 12.
- (2) The identity or dialectic variations of the class names in neighbouring or even distant tribes.
- (3) The substantial identity of the groups of totem names which represent the primary classes.

These totem names have been given in their English forms for more easy comparison.

Where the primary classes are not given it may either be that they have become obsolete in that tribe, or that they have been overlooked or not ascertained by my correspondents. I have cases before me supporting both these possibilities. The class divisions of the Narrinyeri tribe in South Australia only now consist of a number of localised totems; the primary classes of the Kamilaroi were only traced out by special inquiries.

Where no sub-classes are recorded it may be either that they have never come into existence, or that they have been lost, as have been even the totem names in some cases. Such an instance is that of the Woiworung tribe of Victoria, whose class system consisted of the primary classes and one totem, five other totems together with it having undergone apotheosis as stars.

¹ By Mr. E. Palmer (see p. 304).

Further insight into the organisation of these class systems will be obtained by comparing their rules of marriage and descent, as regards the classes. By tabulating them in the order just given their similarities and dissimilarities can be easily remarked, and the changes which certain allied systems have undergone will more clearly show themselves.

Kamilaroi Tribe.

Male	Marries	Children are
Muri	Butha	Ipai and Ipatha.
Kubi	Ipatha	Kumbo and Buttha.
Ipai	Kubitha	Muri and Matha.
Kumbo	Matha	Kubi and Kubitha.

Kiabara Tribe.

Male	Marries	Children are
Baring.. ..	Bundah	Turowine.
Turowine	Balcoin	Baring.
Bulcoin	Turowine	Bundah.
Bundah	Baring	Bulcoin.

Kuin-Murbura Tribe.

Male	Marries	Children are
Kurpal	Karilburan	Munal and Munalan.
Kuialla	Munalan	Karilbura and Karilburan.
Karilbura	Kurpala	Kuialla and Kuiallan.
Munal	Kuiallan	Kurpal and Kurpala.

Wakelbura Tribe.

Male	Marries	Children are
Kurgila	Obuan	Wungo and Wungoan.
Banbe	Wungoan	Obu and Obuan.
Wungo	Banbean	Kurgila and Kurgilan.
Obu	Kurgilan	Banbe and Banbean.

Kunandaburi Tribe.

Male	Marries	Children are
Yungo	Mattara	Mattara.
Muttara	Yungo	Yungo.

Diëri Tribe.

Male	Marries	Children are
Kararu	Matteri	Matteri.
Matteri	Kararu	Kararu.

Ta-ta-thi Tribe.

Male	Marries	Children are
Kilpara	Muquara	Muquara.
Muquara	Kilpara	Kilpara.

Yerrunthully Tribe.

Male	Marries	Children are
Koorgielah	Coobaroo	Woonco.
Bunburry	Woonco	Coobaroo.
Woonco	Bunburry	Koorgielah.
Coobaroo	Koorgielah	Bunburry.

Mycoolon Tribe.

Male	Marries			Children are
Jimalingo	Ngaran-ngungo ..	..	..	Yowingo and Carburungo.
Yowingo	Munjingo .. ..	..	..	Jimalingo and Goothamunga.
Bathingo	Carburungo .. ..	..	..	Marringo and Ngaran-ngungo.
Marringo	Goothamungo ..	..	..	Bathingo and Munjinga.

Koogo-Bathy Tribe.

Male	Marries			Children are
Barry	Jury .. ..	..	..	Ararey.
Munjilly	Ararey .. ..	..	..	Jury.
Ararey.. ..	Mungilly .. ..	..	..	Barry.
Jury	Barry.. ..	..	..	Mungilly.

Kombinegherry Tribe.

Male	Marries			Children are
Kurbo.. ..	Wirrikin .. ..	..	..	Wirro and Wingan.
Marro	Wongan .. ..	..	..	Wombo and Wirrikin.
Wirro	Kurgan .. ..	..	..	Kombo and Kooran.
Wombo	Kooran .. ..	..	..	Marro and Kurgan.

The first thing that shows itself in examining the preceding tables is the evident connection of the Kiabara and Kamilaroi class systems through the identity of their primary classes, although the sub-classes are so different. Mr. Jocelyn Brooke's information is also valuable as affording a means of substantiating the conjecture which arises out of the rules of marriage and descent of the Kiabara and the aboriginal diagram for ascertain-

ing a child class name, that descent runs in the male line. This is all the more important as in the Kamilaroi classes it is uterine.

A further examination of the tabulated class systems shows that there are three several cases to be considered. The first case is that of the primary classes, and for this the Kunandaburi may serve for a typical example, for it is this community which in its existing customs has so far proved to stand nearest to the theoretical divided commune. The second case is that of the sub-classes which arise out of the division of their primaries. For this the well-known Kamilaroi class divisions serve as an example. In this aspect it is well to note the advance which has been made by the Kiabara in adapting the rule of descent through the male line to a class system which represents that of the Kamilaroi with only slight variations in its subdivisions. The third case is that of the totem names. That these also influence marriage and descent is well known, but the manner in which it is done is not shown in the tabulated systems. In order to illustrate this I now give the rules of marriage and descent of the Kuin-Murbura, for which I am indebted to the kindness of Mr. W. H. Flower, who has in working it out rendered it all the more valuable by the addition of the sub-class names.

Kuin-Murbura Tribe.

Male	Marries	Children are
<i>Kurpal</i> = eaglehawk..	<i>Karilburan</i> = hawk ..	<i>Munal</i> = hawk.
<i>Kurpal</i> = laughing jackass	<i>Karilburan</i> = curlew ..	<i>Munal</i> = curlew.
<i>Kuialla</i> = eaglehawk..	<i>Munalan</i> = hawk ..	<i>Karilbura</i> = hawk.
<i>Kuialla</i> = laughing jackass	<i>Munalan</i> = curlew ..	<i>Karilbura</i> = curlew.
<i>Karilbura</i> = curlew ..	<i>Kurpalan</i> = laughing jackass	<i>Kuialla</i> = laughing jackass.
<i>Karilbura</i> = clear water	<i>Kurpalan</i> = eaglehawk	<i>Kuialla</i> = eaglehawk.
<i>Karilbura</i> = wallaby ..	<i>Kurpalan</i> = laughing jackass	<i>Kuialla</i> = laughing jackass.
<i>Karilbura</i> = hawk ..	<i>Kurpalan</i> = eaglehawk	<i>Kuialla</i> = eaglehawk.
<i>Munal</i> = curlew ..	<i>Kuiallan</i> = laughing jackass	<i>Kurpal</i> = laughing jackass.
<i>Munal</i> = clearwater..	<i>Kuiallan</i> = eaglehawk	<i>Kurpal</i> = eaglehawk.
<i>Munal</i> = wallaby ..	<i>Kuiallan</i> = laughing jackass	<i>Kurpal</i> = laughing jackass.
<i>Munal</i> = hawk ..	<i>Kuiallan</i> = eaglehawk	<i>Kurpal</i> = eaglehawk.

This shows clearly that while in the sub-classes the modified form of uterine descent is followed, in the totems the old direct line runs as in the primary classes themselves.

I now turn to the interesting features brought out by Mr. Palmer's facts.

A very unusual character is brought out in the Mycoolon classes by the male and female names of each sub-class being different, and not, as is usually the case, the same, or formed by the addition of a feminine affix to the male name. In the Kombinegherry classes there is this same peculiarity, and it may therefore prove to be more common than I have hitherto thought it to be.

This difference in the male and female class names tends to confuse the observer as to the line of descent, but it can be clearly made out by a working formula, if I may call it so, which I have found invaluable in these inquiries, and which I have already made use of in a communication to the Anthropological Institute of Great Britain.

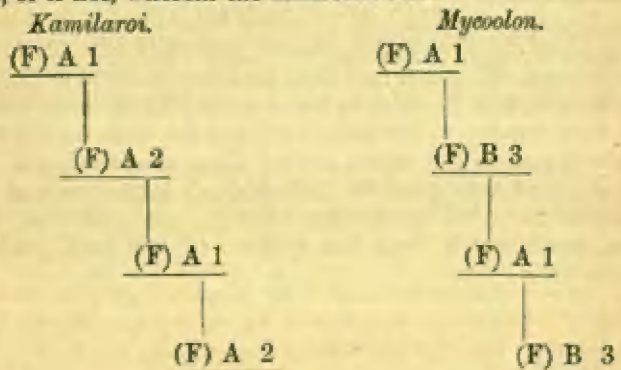
Calling the primary classes A and B and the sub-classes 1, 2, 3, 4, a simple diagram then discloses at once by inspection in which line descent runs. Thus in this case the Mycoolon classes placed in their intermarrying couplets will be as follows:—

Jimalingo } = A 1 and A 2.
Yowingo }
Bathingio } = B 3 and B 4.
Marringio }

I have here also discarded the female names for simplicity. Treating the Kamilaroi classes in the same way, we have:—

Muri } = A 1 and A 2.
Kubi }
Ipai } = B 3 and B 4.
Kumbo }

We know that descent runs in the female line in the Kamilaroi classes, and by noting the descent from mother to daughter in each of the two cases we may learn whether the result is the same, or if not, wherein the difference lies.



This shows at once that in the Kamilaroi system the daughter takes the name of her mother's primary class, but in the complementary subdivision to that of the mother. In the Mycoolon system the daughter takes the name of her father's primary class, but in the complementary subdivision to that of the father. In other words, in the Kamilaroi system descent is uterine, while in the Mycoolon system it is agnatic.

The peculiarity to which Mr. Palmer directs attention in the Mycoolon classes is a result incident to the arrangement of the sub-classes when under the influence of agnatic descent: the girl is of the same class name as her mother's mother.

In the Kamilaroi system, under the influence of uterine descent, the son is of the same class as his father's father.

The evidence of Mr. Palmer's native informant that the Koogobathi class system is the equivalent of that of the Mycoolon is all the more important that the two tribes are locally far apart, and also because of the dissimilarity in the systems themselves, and because in one the line of descent is uterine, and in the other agnatic.

The identification of the class system of the Mackay tribe with that of the tribe at Rockhampton is also important, yet I think that it requires further investigation, for according to information which I have received, the names Yungaroo and Wootaroo are said to be the equivalents of the Wakelbura primary classes Mallera and Wuthera, which I find to extend in dialectic, and other variations from Mackay, in Queensland, to at least Port Augusta, in South Australia. The names Gooleta and Gooberoo, I cannot doubt, are forms of these sub-classes, which are given in the preceding table as Obū, Coobooroo, and Coobaroo. It is to be hoped that more information on this head may turn up, and thus add another link to a chain which is slowly but surely becoming evident, and which binds the aboriginal communities of Australia into a perfect whole.

The class systems which Mr. Palmer has collected, and those which I added for illustration, show a process of advance in the idea of descent. Whatever may have been the causes at work, they do not appear, and in order to learn something of their nature it will be necessary to carefully work out the customs, common and uncommon, of the tribes having these class divisions. In those customs I anticipate we may find at least traces of the ideas which have led to changes affecting not only the class systems, but through them the systems of relationship which rest upon them.

DISCUSSION.

Mr. H. O. FORBES remarked that the message-sticks to which reference had been made in Mr. Palmer's paper might possibly have no other use than that of simple reminders to the bearer, and have no absolute meaning, just as in Sumatra he had often had messengers come to him bringing messages from a distance, who, having been charged with many items of intelligence, were furnished with a bagful of pebbles as remembrancers. On proceeding to deliver the message the bearer commenced, "Article the first," at the same moment withdrawing one of the pebbles from the bag and placing it on the ground before him; then "Article number two," and so on till, having exhausted the contents of the bag, he would remark, "And there are no more." It was possible, therefore, that the Australians' notches and marks might have a similar function to perform.

In Maccluer Inlet, in N. New Guinea, he had met with apparently authentic reports of pictures, said to be representations of human hands, bodies, &c., engraved on the cliffs at the extreme end of the Inlet; but of what nature they really were he had been able to obtain little information.

The Australian system of totems, he said, was very interesting and difficult to understand; but the prohibition of certain totems and same-name-relatives to intermarry could not, he thought, be due to any definite intention—arrivable at only after close observation and generalisation—in their minds of preventing the evils arising from the mixture of too closely related blood. The same practice, in a less marked degree, was observed by him in Sumatra, where marriage between villagers of the same *Marga* (a regional subdivision, consisting of many villages, either situated near together or widely separated) is forbidden; as well as in the interior of the eastern part of the island of Timor, of which he hoped to give some account in a paper to be presented to the Institute at an early date.

Mr. BERDOR inquired if it were actually the fact that the suckling of puppies by the women of the tribe described was a common practice? He would be glad to know if any other Australian traveller could confirm the statement. Dr. Lauder Lindsay, in his work on "Mind in the Lower Animals," had referred to the practice as existing in some places, but, as far as he remembered, had not given any clue as to where the custom obtained.

The PRESIDENT and Mr. PARK HARRISON also joined in the discussion.

OLD SCANDINAVIAN CIVILISATION *among the MODERN ESQUIMAUX.*

By E. B. TYLOR, D.C.L., F.R.S., V.P. Anthropol. Inst.

[WITH PLATES VI AND VII.]

(Read June 12th, 1883.)

THE Esquimaux race, in the state in which they became known to the civilised world in modern times, are usually regarded by anthropologists as stone-age savages, representing an early stage in the development of civilisation. In many respects this may be right, as the Esquimaux tribes from Greenland to Behrings Straits were undoubtedly found using stone implements and living as rude hunters and fishers. My present object, however, is to call attention to the fact that some of their arts and customs cannot be treated as of native development, or as properly belonging to savage life. On the contrary, they seem to be of civilised origin, and probably to have been borrowed from the Scandinavians during the long period when the Esquimaux were in intercourse with them, between A.D. 1000–1500.

Some details of the condition of the Esquimaux when they first came in contact with the Europeans may be gained from the passages in old Scandinavian chronicles referring to the *Skrællings*, or dwarfs (Old Norse *skrál* = little), as the usual opinion appears quite reasonable that these little people must have been Esquimaux, although met with so far south of the modern habitat of the race. The sources of information are the sagas of Eirik the Red and of Thorfinn Karlsefni, published wholly or partly in various collections, and to be found conveniently in the "*Antiquitates Americane*" (Copenhagen, 1837). Eirik's discovery of Greenland was about A.D. 982, but no mention is made of natives; indeed, it has been thought that the Esquimaux may not have migrated so early into that inclement region (see Waitz, "*Anthropologie*," Vol. III, pp. 300, 303). It was in A.D. 1004 that Thorvald's coasting expedition met with the *Skrællings* far south, at Kjalarnes (Keel-ness), which is considered to be Cape Cod. In this New England district they evidently formed a considerable population. The name given them by the Northmen to indicate their small stature, as well as the description of their dark colour, ugly hair, great eyes, and broad cheekbones, fit with the build and features of the Esquimaux rather than of other American tribes. That they brought furs to barter, and did not understand iron hatchets, proves nothing, as this might have been true of Algonquins or other of the so-called North American Indians. But the *Skrællings* had peculiarities of culture which are characteristic of the Esquimaux, but not of the neighbouring tribes. They paddled in skin canoes (*húdh-keipr*), apparently each holding three men;

they hurled their spears with war-slings (*val-slōngva*), a term which would perfectly apply to the wooden spear-throwers; they seem to have had the large ball-like blown-skin floats attached to their harpoons; some of them carried vessels with a mixture of marrow and blood for provision, a habit which agrees with the eating of raw meat which has remained common among the Esquimaux till modern times, and to which, indeed, they owe their name of *Eskimantsic* or "raw-flesh eaters," given them by the Abenaki Indians, and in the mouths of the French colonists passing into *Esquimaux*.

The old Scandinavian colonies in Greenland existed for centuries side by side with a nomad Esquimaux population. But the white men dwindled, and at some time in the fifteenth century, when intercourse ceased with Europe, their settlements probably ceased to exist. Doubtless the Scandinavians were partly killed off by the Esquimaux, but there is also reason to believe that some of the last survivors became merged in the Esquimaux population. This probability has been connected, not unreasonably, with the occurrence among the natives of some families whose larger build and more European feature distinguish them from the ordinary Esquimaux.

It was early in the eighteenth century that the Scandinavian missionaries reopened the long-dropped intercourse with Greenland.¹ The natives had by no means forgotten the old times when the Northmen had lived in their land; they called them *Kablunat*, a name they still give to Europeans. It seems even as if they remembered their own Old Norse name of *Skrálling*, for they sometimes called themselves *Karalit* (sing. *Karalek*), which they said was not a native word, but a name given to them by the former Christians, and as Cranz reasonably argues, this is the broken-down form which the Norse word *Skrálling* would naturally assume in an Esquimaux mouth (Cranz, "Historie von Groenland," Barby, 1765, pp. 331, 337). The modern Greenlanders have among their traditions, collected by Dr. Rink in his "Eskimoiske Eventyr og Sagn" (Copenhagen, 1866), several which record their recollections of the old Northmen, and which give an idea of the quarrels, murders, and retaliations between the two races, which were one main cause of the extinction of the white men. Our present business is to consider the condition of the Greenlanders as the Danish missionaries found them in the eighteenth century, and to examine how far their then arts, customs, &c., may be considered as adopted from the mediæval Scandinavians. The chief descriptions are:—1. Hans Egede,

¹ The voyages of Frobisher and Lindenau need not be taken account of, as probably not having had any effect on the condition of the Esquimaux.

"Det Gamle Grønlands nye Perustration eller Naturel-Historie," Copenhagen, 1741; (the English translation published under the title "A Description of Greenland, by Hans Egede," London, 1818, is very incorrect, and only gives fragments of the illustrations). 2. David Cranz, "Historie von Groenland," Barby, 1765.

As the most striking illustration of ancient European influence on the Greenlanders, may be noticed the dress which the modern Europeans found them wearing. Fig. 1 (Plate VI), representing part of a native group of men and women playing football, is taken from Egede. Like other engravings of last century books of travel, its figures, attitudes, and dress are somewhat conventionalised in European style; nevertheless, for the present argument, it is preferable to better modern drawings, and its details can be compared with Egede's careful description of native costume, which may be relied on for the particulars of garments worn when he first arrived in the country, for he mentions the linen, cloth, and new fashions since introduced by the missionaries and traders. Egede's account (cap. xi) runs as follows:—

"*On the Greenlanders' Costume.*—Their garments consist mostly of reindeer-skin, sealskin, and also bird-skins, very neatly dressed and fashioned. The men-folks' costume is of this model; the tunic is like a jacket with a cowl, which serves them as a hood. It reaches nearly down to the knees. Some have a lappet before and behind. Their breeches are quite small, and reach not entirely over the loins, which is for convenience of getting in and out of their small boats. Next the body they have not linen, but turn in the hair of their jackets to be the warmer. Outside the jacket they have a peculiar sea-jacket, which is of sealskin with the hair stripped off, and will keep the water out when they go to sea in their small boats. Between the sea-jacket and the innermost jacket they wear either a linen shirt, or in default one of dressed sealskin, which also helps to keep the water from the inner jacket. They have besides, jackets or shirts of striped stuff or linen, as well as of blue or red cloth, but made up after their own fashion, which they buy from our people or the Dutch, and parade in them when they are in the country: likewise breeches of the same sort. Their hose or stockings are made of reindeer or sealskin, but they now mostly use woollen hose, white, blue, and red, which they also get by trade with us. Shoes and boots they have of black, gold, or red dressed and tanned sealskin, very neatly sewed, without heels, but gathered before and behind, and they fit very well on the legs and feet. The women's costume differs from the men's only in being wide and high on the shoulders, with large high hoods. The married women with

children have their jackets especially wide and roomy, that they may carry their small children within on their backs, and they use no other cradle or swaddling-clothes for them. They have two pairs of drawers, one pair inside reaching over the thigh. These they never take off, but lie with them on at night; but the outside breeches reach to the knees. These they are not wont to wear in summer, but only in winter when they are out, not when they are in the house, for they pull them off as soon as they come in. They have double jackets, one inside next the body, of reindeer-skin, with the hair turned inward, and another outside, which is also of thin-haired and smart-coloured reindeer-skin, or, in lack of this, of sealskin, edged and bordered with white within the seams, which looks smart. Their shoes are like the men-folks, but their boots have wide tops like our men's boots."

Cranz's account (Book III, Part 1), published some years later, mostly follows Egede, but adds a few points of detail. He notices that the tunic or jacket is sewn on all sides like a monk's robe, so that they thrust in their arms first and then pull the garment over their heads like a shirt. He speaks of the bird-skin jackets being worn as shirts, with the feathers inside, and says that the thin-haired reindeer over-jackets had now become so scarce that only the richest women could parade them. The stockings, he says, are of the skin of seal-fœtus, and the heelless shoes of smooth black tanned seal leather, drawn together above with a thong drawn through the thick sole. Well-to-do people had come to wear woollen stockings, hose, and caps. Fig. 2, Plate VI, is reduced from the engraving in Cranz (Plate III). The more modern Greenland dress, traceable from this early form with some modification, is depicted in Rink's work above mentioned. (English versions of Rink's writings have been edited by Robert Brown, under titles "*Tales and Traditions of the Eskimo*," London, 1875, and "*Danish Greenland*," London, 1877.)

It is evident that this costume differed utterly from the rude fur cloaks of the Fuegians in the Antarctic cold region, and indeed from any savage or low barbaric American dress. On the other hand, their coats with hoods, shirts, breeches, stockings, shoes, and boots, form, taken together, a mediæval European costume. The inference is here considered to be that the Greenlanders, early in the eighteenth century, were wearing the costume of the old Scandinavians, in which, however, for want of woollen and linen, the material throughout had come to be skin, fur, &c., and the fashion had been in some measure adapted to suit the peculiar conditions of Polar life. It is in part through the use of such highly-developed clothing, that the Esquimaux have been enabled to live in comparative comfort in their rigorous climate.

Another appliance by which the Esquimaux were enabled to live in some comfort in the Polar regions was their blubber lamp. Wanting trees, and requiring the scanty supply of drift-wood for implements and furniture, they had practically no fuel or means of lighting except fat and oil, especially seal-blubber, burnt in the lamps in question. The family compartments of a Greenland house are drawn and described by Cranz, each provided with its half-moon-shaped potstone lamp, with a wooden vessel beneath it to catch the overflowing oil, placed on a low wooden stool, and with a potstone kettle hung over it by four cords from the roof, in which all the cooking was done. The lamp was fed with blubber or train oil, and along its straight side moss, rubbed small, served for a wick, which burned so brightly that with so many lamps the house was not only lighted but warmed. Fig. 1, Plate VII, shows an Esquimaux lamp of potstone, now exhibited by Dr. Rae, brought home by him from Repulse Bay, while fig. 2, Plate VII, is taken from Nordenskjöld's "*Voyage of the Vega*," Vol. II, p. 22, being in use among the Chukchi of North-East Asia, the western limit to which Esquimaux life has spread. The wooden foot and drip-vessel mentioned by Cranz are drawn in Fig. 3, and the curved lamp-trimmer belongs to both. Now no lamps of this kind—in fact no lamps at all—were known to the indigenes of America, not even to the comparatively cultured Mexicans and Peruvians. On the other hand, open dish oil lamps, the same in principle as those of the Esquimaux, may be traced all across Europe and Asia. The collection of General Pitt Rivers contains some specimens, and I exhibit a modern North Italian brass one, bought within a few weeks in the market of Pallanza. In Scotland, made in iron, they were till lately the regular house-lamp, under the name of *crusie* (French *creuset*). They are often made with two dishes, the lower one to catch drippings of oil, as is shown¹ in fig. 4, Plate VII. It is interesting to notice the name *collie* given to these lamps in Shetland (see A. Mitchell, "*The Past in the Present*," p. 101). This is apparently the old Scandinavian word *kola*, "a small flat open lamp." The word is to be found in the Cleasby-Vigfusson "*Icelandic Dictionary*," with passages cited—among them one from the Old Laws of Norway ("*Norges Gamle Love*," Vol. II, p. 247), which is especially to the present purpose. It is a law that men are to have lights either in lanterns, or in *kolas* of stone or brass (*eda i kolum a starni eda ari*), or in lamps. Now the Greenlanders' name for their lamp is *kollek*, remarkably corresponding with

¹ The figure is taken from a specimen presented by Dr. Garson to the University Museum at Oxford, and intended to form one of the series of lamps in the Pitt Rivers collection.

the Scandinavian term. This was well known to Egede, who noticed among words which he thought the Greenlanders had borrowed from the Old Norsemen, "*kollek*, a lamp, which in Norse is called a *kolle*." If this etymology is sound it much strengthens the present argument, but it is necessary to mention that an Esquimaux dictionary has a different etymology for the word *kollek*,¹ which if true would negative the notion of its Scandinavian derivation.² But etymology apart, the fact remains that the Greenlanders doubtless saw in the houses of the old Scandinavians lamps of the simple dish kind, by imitating which and substituting moss for the linen fibre wick they would obtain Esquimaux lamps. It should be noticed that kettles, &c., carved out of the steatite known to us as potstone, or *lapis ollaris*, were well known to the Scandinavians, who called this stone *talg-sten* (tallow-stone) (see Hylten-Cavallins, "Warend och Wirdarne," Part II, p. 190). It is thus likely that the Greenlanders may have learnt from the Scandinavians the art of working potstone both into kettles and lamps. If so, the use of these would spread from Greenland over the whole Esquimaux district. It is worth while to notice that Dall's examination of the shell-heaps left by tribes more or less Esquimaux in the Aleutian Islands, seems to show that in the earliest periods lamps were unknown to these tribes, but eventually came into use, rude in pattern, but on the principle of the Esquimaux lamps (W. H. Dall, in "Contributions to North American Ethnology," Vol. I, Washington, 1877).

It remains to call attention to miscellaneous points of culture among the Greenland Esquimaux, which likewise look as though adopted from the old Scandinavians. Few habits are more notable among the early Icelanders than their habit of reciting satirical verses against one another, which led to such murderous quarrels that laws were made punishing makers of "nith-songs" with exile. When the Scandinavian missionaries came, in the eighteenth century, to Greenland, they found in full vogue the custom of singing satirical songs, long almost discon-

¹ Erdmann, *Eskimoisches Wörterbuch*; *kollek*, the uppermost over anything; *kollit*, a lamp, because this in the Esquimaux house is raised above the floor; small lamps which stand quite on the ground are also called *allek* (i.e., undermost). Among the other Greenland words which Egede claims as borrowed from the Northmen is *koonnek*, the plant angelica, which in Norse is *grönn*; and *sisa*, porpoise, Norse *sisa*.

² Mr. G. Brown Goode, United States Commissioner at the International Fisheries Exhibition, who was present when the paper was read, has since communicated the fact that the Cape Cod fishermen, chiefly of English descent, used, till within the last fifty years, simple lamps of the kind here discussed, fed with dog-fish or shark oil; a few of these old lamps exist, and they are called *boil* or *kyle*, a word corresponding both to the Scandinavian and Esquimaux forms.

tinued in their own country. Egede describes the native singer accompanying himself by beating a drum, a circle of bystanders chanting the chorus. Of the songs thus performed the chief are satirical poems, and when one man has a grudge against another he will challenge him to a kind of duel of such songs, which is, so to speak, fought out before the assembly till one gives in. This was their common way of vengeance (Egede, cap. xv.; Cranz, p. 231). Rink gives a picture of a Greenlander singing a nith-song, and specimens of the songs themselves, as, for instance, one ridiculing a certain Kukouk, who was no good as a hunter, but wanted to make friends with the whites. It begins thus, the chorus alternating with the strophes:—

Bad little Kukouk, *Imakaiya haiyd,*

(Chorus) *Imakaiya ha.*

He takes care of himself, *Imakaiya haiyd,*

(Chorus) *Imakaiya ha.*

He wants to travel away from the land, *Imakaiya haiyd,*

(Chorus) *Imakaiya ha.*

With a great great ship, *Imakaiya haiyd,*

(Chorus) *Imakaiya ha.*

&c., &c., &c.

The resemblance of the custom of satirical songs was so self-evident to the Danes, that Rink actually calls them *nidvise*, the very term he would have used in describing the customs of his own Norse forefathers (Rink, "Eskimoiske Eventyr," Vol. II, p. 138; "Danish Greenland," p. 150).

It remains to quote from Egede what is by no means the weakest evidence in the present argument—his account of the Greenlanders' games. The young people, he says, have games or pastimes among them in the evening." They have a little piece of wood with a hole in one end, to which they attach by a thread a little pointed peg, and throw it up to catch the wood on the point in the hole. Now he who can twenty times running hit the hole and catch it on the pin has won, but he who cannot hit twenty times running has a black mark made on his face for every time he misses.¹ They have besides another game, which is nearly of the nature and purpose of cards and dice: namely, they have a little piece of wood pointed at one end with a peg in it. When they sit down to play, and each has staked what he thinks proper, one gives the aforesaid piece of wood a turn with his fingers, and whoever its end points to, he has won, and draws to himself all that the others have put down, at which they continue as long as they like. Ball-

¹ I learn from Mr. Vigfusson that the black mark on the loser's face still belongs to Scandinavian boys' games.

playing is their most usual sport, especially by moonlight, and they have two modes of playing. When they have divided into two parties, one casts the ball to another who is of his own party; those of the other party strive to get the ball from them, and thus it goes on by turns among them. The other mode of playing ball is that they set up two marks, 300 or 400 paces apart; dividing as before into two sides, they assemble in the middle between these goals, where they throw down the ball and kick it with their feet each toward his own goal. He who is quick on his legs and can get the ball before him, comes first to the goal and has won. Thus, they say, the souls of the dead play ball in heaven with a walrus' head, when the aurora is seen, which they hold to be the souls of the dead." (Egede, cap. xv; Cranz, Book III, Part 3). Here, then, we have four games. One is a simple kind of bilboquet, like our cup-and-ball played with the point only. One is gambling with a teetotum or revolving pointer. Of the two ball games, one is ordinary football; the other, where each side tries to get the ball from the other, is what in Old England was called hurling, and this correspondence appears still more in Egede's drawing, where the players are seen to be matched in pairs, one of each party, one laying hold of the other to prevent him from getting the ball to the goal (see Strutt, "Sports and Pastimes," s.v. "Hurling.") It will be agreed that the rude Esquimaux never could have invented for themselves this set of four Old World games. In all probability they learnt them from the Europeans during their four centuries of intercourse in the Middle Ages. Here I leave the subject for the present, trusting that further inquiry may separate more exactly the original Esquimaux culture from such effects of contact with the white men as are brought into notice in this paper.

Description of Plates VI and VII.

PLATE VI.

- Fig. 1. Group of Greenlanders playing football, showing the native dress. From Hans Egede, "Det Gamle Grønlands nye Perustration, &c." (Copenhagen, 1741).
 „ 2. Greenland man and woman, showing native dress. Reduced from Cranz's "Historie von Groenland" (Barby, 1765).

PLATE VII.

- „ 1. Esquimaux lamp of potstone, brought by Dr. John Rae from Repulse Bay. *a* side view of lamp; *b* top view of lamp; *c* section of lamp; *d* trimmer, also of potstone.
 „ 2. Lamp of burned clay in use among the Chukchi of North-East Asia, brought home by Nordenskjöld. From the

"Voyage of the Vega," translated by G. A. Leslie (Macmillan, 1879). By permission of the publishers.

Fig. 3. Section of the Chukchi lamp, stand, and trimmer. From the same source. *a* the oil; *b* the moss wick; *c* the foot; *d* the basin under it; *e* the wooden trimmer-stick.

„ 4. Scotch dish oil-lamp, or *crusie*.

DISCUSSION.

The PRESIDENT remarked that as this was the first occasion of Mr. Tylor's appearance at a meeting of the Institute since his appointment to the Curatorship of the Oxford Museum, he must offer the congratulations of the members of the Institute to that University, and express their earnest hope that this appointment, combined with the munificent gift of General Pitt Rivers's collection, might be the inauguration of a new era in the cultivation of anthropology in this country.

With regard to the subject of the paper, it was evident that there could be only three hypotheses as to the origin of the civilised customs among the Esquimaux which Mr. Tylor had described to the meeting. They must have been independently evolved, or they must have been derived from Europe or South Asia by way of Behrings Straits, or, as Mr. Tylor suggested, they were learned from the early Scandinavian settlers. Something might be urged in favour of each of these hypotheses, and therefore the subject before the meeting was an important one for discussion; its solution involved some of the principles lying at the root of this branch of anthropology.

The President also expressed the thanks of the meeting to Dr. Rae for kindly lending the Esquimaux lamp with which Mr. Tylor's paper was illustrated, and read a letter from that gentleman stating his great regret at not being able to be present at the meeting.

Mr. WALHOUSE observed that earthenware saucers, with a small peak and notch for receiving an oil-wick, closely resembling in shape and size the brass example from North Italy exhibited by Mr. Tylor, were commonly used all over Southern India as receptacles for oil-lights. They were used in houses, bazaars, temples, &c., usually placed in triangular niches in the walls. The same sort of little earthen platters were often found abundantly, along with other earthenware, in kistvean and prehistoric graves. Large brass lamps, with several notches for wicks round the rim, nearly resembling in general form Dr. Rae's Esquimaux specimen, were also used in the temple services, as well as clusters of small brass saucers arranged on stands in diminishing circles; examples, the speaker thought, were to be seen in the India Museum.

Mr. BERDON asked the author if he did not think it probable that the source of evolution of the saucer-shaped lamp of the Esquimaux, and others of the same shape, was some shallow shell,

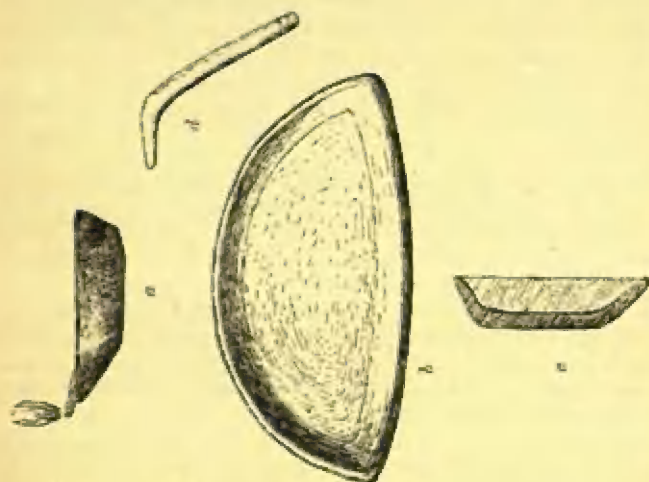


FIG. 1.



FIG. 2.

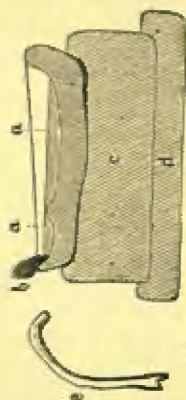


FIG. 3.



FIG. 4.

OIL LAMPS FROM (1) REFUSE BAY, (2 & 3) NORTH-EAST ASIA, AND (4) SCOTLAND.

and if he could give the meeting any facts bearing on this question.

General PITT RIVERS, Mr. A. TYLOR, and Mr. RUDLER also joined in the discussion, and the AUTHOR briefly replied.

On a PALÆOLITHIC FLOOR at NORTH-EAST LONDON.

By WORTHINGTON G. SMITH, F.L.S., &c.¹

[WITH PLATES VIII TO XXIII.²]

I FIRST noticed the thin stratum of flint, in some places full of Palæolithic implements and flakes, and termed by me a "Palæolithic floor," in the beginning of 1878, on the south side of Stoke Newington Common, London; later in the spring I observed a similar stratum in the fields and market gardens on the north side of the Common, and eventually in many other places for three or four miles to the north, south, and west from this centre. On June 25th, 1878, I read a brief paper before this Institute, calling attention to the implements found by me (many *in situ*) at Stoke Newington, Shacklewell, Lower Clapton, and many other places. At the same meeting I exhibited a broken implement and flakes found by myself at Grays Thurrock, and others from West Tilbury, in South Essex.

Until 1878 only one implement had been found in an excavation in this district: this was lighted on by Mr. Norman Evans at Highbury in 1868, and is figured in Mr. John Evans's "Ancient Stone Implements of Great Britain," p. 525. This is a kind of side scraper, and is undoubtedly derived from the "Palæolithic floor," as I have since seen the "floor" in section at the spot where the instrument was found, and I have seen the implement itself, which exactly agrees in colour and sharpness with other implements from the same neighbourhood. Moreover, I have one found by myself almost exactly like it.

Two other implements had been found in the streets: one on the Lower Clapton side of Hackney Downs, in 1866, by Mr. G. H. Gaviller, and the other in Dunlace Road, Lower Clapton, by Mr. Ancombe; the latter instrument is in the Museum of Practical Geology, Jermyn Street.

¹ This paper was read before the Anthropological Institute by Mr. W. G. Smith on June 26th, 1883, and has since been brought up to the present date (January, 1884) by the author.

² These plates have been supplied by the author. Some of the illustrations have already appeared in "Nature" or in the "Transactions of the Essex Field Club," while others have been prepared by Mr. W. G. Smith for this paper.

In 1878 the exposed sections were insufficient to demonstrate for certain that a thin stratum of worked flints of Palæolithic age was spread for many miles a few feet beneath the present surface; indeed, the evidence was not complete till the present year (1883) that this stratum really existed on both sides of the Lea at north-east London. Excavations have not been numerous, and it was only by keeping a record of the exposed surface of every drain, house-foundation, pit, &c., during these five years, that the fact has been proved that such a stratum really exists. Some difficulty was also experienced in demonstrating the presence of "warp and trail" over the "floor," as the ground at north-east London has been so disturbed by market-gardening and brick-making that it is only in certain favourable positions, where the original undisturbed surface of the ground can be lighted on, that undoubted "warp and trail" can be clearly seen.

The fact has, however, now been proved beyond dispute that the whole of the "Palæolithic floor" is, unless it has been artificially disturbed in modern times, covered with the "warp and trail" belonging to the last geological period of great cold.

In describing the position of this "floor," with its implements, as proved to exist up to the present time, the better plan will be to indicate it as seen in vertical section, then advert to its horizontal extent, next refer to the fossil bones and shells embedded in it; then describe the weapons, tools, &c., of stone; and, lastly, glance at the possible condition of the Palæolithic people who once lived on the "floor," and the people who lived at north-east London long before the floor existed.

A small portion of north-east London is engraved on the scale of 1 inch to the mile in fig. 1, Plate VIII. This area includes Stamford Hill and Tottenham in Middlesex, and Higham Hill, Walthamstow, Woodford, Snaresbrook, Wanstead, and Barking Side in Essex. The dotted lines show the distribution of the river gravel in regard to the river Lea on the left, and the Roding on the right. The gravel banks on both sides of the two rivers were continuous in Palæolithic times, but part of the material has since been removed by denudation. Fig. 2, Plate VIII, shows a section to the same horizontal scale, looking north, the vertical scale being 800 feet to the inch. The black portions on the more elevated parts show the implementiferous gravels, and the black tint below the ordnance datum line (below the rivers) is the lower gravel found at those positions. The figures indicate the heights above the mean sea-level. *B* is London clay, on which the gravels rest; *C*, the Woolwich and Reading beds; *D*, Thanet sand; *E*, Chalk; *F*, Upper Greensand; *G*, Gault. Beneath this section are two other sections (Plate VIII, figs. 3 and 4), through the rivers Lea and Roding; these show the

gravels above and under the streams. The two latter sections are drawn to a horizontal scale of 3 inches to the mile, and a vertical scale of 320 feet to an inch, in order to more clearly show the gravels as they rest on the London clay. The plan and sections are founded (by permission of Mr. William Whitaker) on the admirable geological model of London in the Museum of Practical Geology, Jermyn Street.

The "Palæolithic floor" at north-east London is generally on the top of the river gravel, and just beneath the "warp and trail." Its position will be seen indicated on the accompanying section, Plate IX, fig. 5, drawn to a horizontal scale of 2 inches to the mile, and a vertical scale of 100 feet to an inch. It is taken looking north from Stoke Newington Common, Middlesex, on the west, to the south of Walnut Tree House, to Moyers Lane, Leyton, Essex, on the east. These places are distinctly marked on Stanford's Library Map of London, on the lower parts of Sheets 3 and 4. The maps may be purchased geologically coloured, showing the drift deposits.

The extreme left of the section shows Stoke Newington Common 85 feet along the ordnance datum (with the neighbouring Hackney Brook, whose surface before it was recently obliterated was 68 feet above the ordnance datum), dropping into the Lea valley, the surface of the river on this line being 20 feet above the ordnance datum. On the right the section gradually rises to the Leyton side of the Lea, crossing the Fillibrook stream. The stream at this part, which too will soon be obliterated, is 44 feet above the ordnance datum, and the adjoining Moyers Lane is 56 feet.

The diagonal shading at the bottom of the section shows the London clay, the vertical shading above indicates the river gravel. The heavy black line on the top of this gravel shows the line of the "Palæolithic floor" on both sides of the Lea, and the uppermost line shows the line of "warp and trail" surmounted by humus. Undoubtedly the "Palæolithic floor" and the "warp and trail" at one time extended right over the valley of the Lea, as indicated by the heavy dotted line and the fine line above. At the time when the Palæolithic men lived on this "floor" the river was probably some 20 feet higher than now, as indicated by the dotted curve; the valley at that time, therefore, was much flatter and more marshy, and being flat the river of necessity was constantly changing its bed. The excavation of the last 20 feet of the Lea valley has been made since the "warp and trail" was deposited on the Palæolithic floor. Very little denudation has, however, taken place in recent times; for Roman remains, and even Neolithic celts, are found in the alluvial flats at *D D*.

At the points *A* and *B*, the "warp and trail" has been denuded off the "Palæolithic floor," and at these special points the "floor" crops up on the surface. At these positions, therefore, perfectly unabraded Palæolithic implements and flakes (which have never been moved unless in agricultural operations) may be found as the Palæolithic implements of chert now are at Bois du Rocher, near Dinan, in Brittany. It must, therefore, never be too hastily assumed that because Palæolithic implements are sometimes found in an unabraded state on a modern land surface, that they were actually made upon the humus as we now see it. The surroundings of every such position should be carefully noted. At the point *C*, and at other well-defined distant points from the Lea and Thames, the thin stratum, identified as the "Palæolithic floor," ceases. The men had good reasons for keeping within a moderate distance of the streams.

The "Palæolithic floor" on the Essex side of the Lea has been, to a very great extent, pushed away by the advancing "warp and trail," or denuded away since Palæolithic times. At present I have only seen it on the east side of Leyton Street and near Walnut Tree House. On the Middlesex side of the Lea the "floor" is of great extent. I have seen it at London Fields, and south of and at Kingsland, and it exists in some parts of Fleet Street, Drury Lane, Gray's Inn Lane, and Clerkenwell, at about 70 feet above the ordnance datum. It is well seen at Highbury, whence the first implement was obtained by Mr. Norman Evans, at Shacklewell, South Hornsey, some parts of Abney Park Cemetery, and Stoke Newington Common. I, however, have seen traces of it on many other surrounding places, and I believe, in short, that it extended over the whole of East Middlesex, into Herts as far as Hertford and Ware, and on both sides of the Thames from London to the Nore.

It is a curious fact that the superimposed "warp and trail" is also implementiferous; the implements in this material are all more or less abraded, some very much so, and many are whitish or mottled in colour from long contact with the tenacious clay. These implements have been brought from the north, from Amwell, at a height of 181 feet, Ware 145 feet, Hertford 132 feet, and Bush Hill Park and Forty Hill, Enfield, 129 feet, to a lower level, and deposited at north-east London, over the "Palæolithic floor" at about 85 feet. At Ealing Dean certain of the implements have been carried down into the valley from the heights at the north at 164 feet.

When the Shacklewell gravel was referred to by Mr. John Evans ("Ancient Stone Implements," p. 523), he wrote that it rested on the slopes of the Hackney Brook, and from the knowledge of its position to be obtained at that time he was

quite justified in the supposition. When I first found implements in the sand close to this brook, I too thought that the implements really belonged to its valley. But when at last the brook was quite obliterated, and builders dug foundations for houses in the middle of its bed, it was clear that the brook had nothing whatever to do with the Lea and Thames gravel at this place, but had merely excavated its way through it. On a section being made through the brook the "Palæolithic floor" was seen in section on both sides, as at *E*, fig. 5, Plate IX. I have seen a similar section across the Fillibrook stream as at *F*, fig. 5. These brooks, although they probably follow some very ancient depression in the London clay beneath, are quite modern in comparison with the "Palæolithic floor" and its implements.

It is not a little curious that although our existing brooks are of comparatively modern date, yet it has not been uncommon at north-east London to see sections exposed of brooks of Palæolithic age; these ancient brooks became filled in with sand, and then covered by "warp and trail" at the close of the Palæolithic period. An experienced eye can point out the probable position of such obliterated underground brooks at the present day, by noticing certain slight continuous depressions in the present ground surface. An underground bed of a Palæolithic brook exists in Bayston Road, close to West Hackney Church, Stoke Newington High Street. At the present day it may be seen that the houses in Bayston Road very gradually descend from both ends of the road to a very slight depression in the middle, and this slight depression in the road answers to the bed of an obliterated Palæolithic brook beneath. The accompanying illustration (Plate X, fig. 7) is engraved to the scale of $\frac{1}{4}$ th of an inch to the foot, from a section exposed during the present year (1883) at the south of Tyssen Road, and immediately on the west of Bayston Road. At the base of the illustration at *A*, *B*, and *C*, different strata of implementiferous gravel and sand occur: these will be described further on; at *D* the bottom of the obliterated Palæolithic brook is shown: the stratum at the bottom of the brook is deep red sand, derived from the red gravel at *D*; whilst the narrow black seam which is superimposed is London clay incorporated with sand; the bed of the brook at *E* is filled with fine sand, stratified and perfectly horizontal. Above this, at *F*, is "warp and trail," and at the top at *G*, surface *humus*. It will be noticed that the "warp and trail" has ploughed its way through the brook and its banks, which had been previously filled up with fine sand. A few yards off, in the direction of *H*, the bank of the brook was again exposed, untouched by "warp and trail," and on this bank a beautiful unabraded Palæolithic implement was found, with numerous keen-edged flakes. The point *J* is the lowest point in

Bayston Road to this day. At this point the London clay is about 27 feet from the surface.

London clay comes to the surface close by and towards the north-west; nothing is more common than to see seams and rolled blocks of this clay in the sand and gravel, and also in the "warp and trail"; sometimes implements and flakes may be found sticking in this transported clay.

In 1882, whilst watching some excavations in the sand on the north side of Stoke Newington Common, I noticed that numerous almost spherical balls of sand rolled from the tops of the heaps to the bottom as the sand was thrown from the barrows of the workmen. The spheres of sand were about 4 inches in diameter, and many were slightly oval. On breaking them open they were found to consist of rolled blocks of London clay coated with sand: the balls of clay were laminated as if the masses had increased in size in rolling, and between the laminae were distinct remains of leaves like grass. I preserved some of these puzzling balls of clay for a short time, but in drying they broke up into laminae and dust, and so perished. I have now no doubt that these objects were formed exactly in the same manner as the mud-balls described by Mr. G. H. Darwin, in "*Nature*," Vol. XXVII, p. 507. Mr. Darwin states that mud-balls were naturally formed at Bromley, Kent, after a violent storm of rain, probably by pellets of mud being washed down a hillside and rolling as they went; whether accompanied by the melting of snow Mr. Darwin was unable to remember. The higher grounds near Stoke Newington Common are now coated with London clay as they were in Palæolithic times, and if we imagine a violent storm of rain after the breaking up of a frost, pieces of clay might readily be set free, and rolled on to the Palæolithic sands of Stoke Newington, such balls catching up fragments of vegetation on their way.

The best section of the "Palæolithic floor" that I have yet seen was exposed during the formation of the new roads on the north side of Stoke Newington Common, where Alkham, Kyverdale, Osbaldeston, and Fountaine Roads now are. The digging on this ground was continued for five years, from 1878 to 1883, and the various excavations showed that about 4 feet from the surface there was at this spot an immense accumulation of Palæolithic implements, including pointed and oval weapons and tools, large numbers of scrapers, hammer and anvil stones, and flakes and cores without number; most of the weapons and tools being as perfect and keen as on the day they were made.

A section through the ground between Alkham and Kyverdale Roads, bounded on the north by Cazenove Road, and on the south by Stoke Newington Common, is illustrated in Plate IX, fig. 6.

The upper part of the figure shows a section 300 feet in length. The line of the Palæolithic floor is shown at *A A A*, covered by sandy loam and humus; the surface at the north or right hand side is 90 feet 6 inches above the ordnance datum, whilst the south end or left side is 83 feet 3 inches. At this spot the "warp and trail" is less marked than in neighbouring places. The "floor" consists of a stratum of some five or six inches of sub-angular ochreous gravel, in some places only one or two inches in thickness, or only visible as a line of colour. Amongst the flints, which have grey or bright ochreous crusts, are pieces of sandstone, quartzite, white quartz, Lydian stone, and pieces of other rocks, but none of the large masses so often described as belonging to the Thames valley drift at London; a few bones, antlers, teeth, and pieces of chalk and driftwood occur, and amongst these rolled and water-worn stones and bones the black sharp-edged implements are found. In Abney Park Cemetery, not far from the entrance gates, the same "floor" is seen in section in the graves, generally at about 12 feet from the surface. At 8 feet below the "floor" at Stoke Newington Common, and 12 feet from the present ground line, is a second bed of implementiferous gravel, surmounted by sand as shown at the base of the upper illustration in fig. 6, Plate IX. The majority of the implements belonging to this stratum of the London district are found between the 50 feet and 100 feet contour lines of the Ordnance Maps. 70 and 75 feet is a prolific height. Above the 100 feet line, and below the 50 feet line, the implements belonging to this stratum are somewhat rare.

To more clearly show the nature of the "floor" the 60 feet of the upper figure (where marked) is engraved below to a larger scale: *B* is the 12 feet gravel containing rolled fossil bones and abraded Palæolithic implements; *C* is fine buff-coloured sand, often full of fossil shells of land and fresh-water molluscs; *D D D* is the "floor," with its numerous unabraded weapons, tools, flakes, &c. At the point illustrated the "floor" happens to be in duplicate; after the men had made their tools where the lower *D*'s occur a slight flood of water covered the stones with a thin coating of sand: the men then walked over the newly deposited sand, and made other tools on the new "floor." The two white streaks on the top of the upper floor are London clay mixed with sand. Above the floor is sandy loam and loamy sand, distinctly non-waterlaid, and one form of "warp and trail." It is often full of pebbles placed at diverse angles; on the top of all, is humus containing Neolithic implements and flakes, British pottery, bone tools, Roman and mediæval coins, and objects of recent date.

The non-waterlaid covering mass often disturbs the "floor,"

ploughs it up and pushes underneath it. The twisting contortion and undulation of the material above the "floor" seem to prove that it was laid down by moving ice or frozen mud from the north. The abraded and whitened implements and flakes, sometimes found embedded at all angles in the "warp and trail," were no doubt caught up from old exposed surfaces, and carried southwards by the advancing ice sheet. No Palæolithic implements occur in the *humus* above the trail, and they never occur on the surface unless the superimposed material has been naturally or artificially removed. The "warp and trail" seals up all the relics of the Palæolithic age, and as far as the evidence found at north-east London goes, Palæolithic man had quite retired before the "warp and trail" was laid down. I have seen no evidence that he ever returned on to the new surface made by this material.

Fig. 8, Plate X, is a measured section through the "floor," facing west on the other side of the section illustrated at fig. 6; the "floor" is seen at from 3 feet 6 inches to 4 feet 10 inches beneath the surface; muddy trail with a few stones is present at *B* and *C*; *D* is *humus*. In the direction of the arrow from north to south the "trail" is seen pushing under and upheaving the "floor" with its implements; the Hackney Brook is towards the south, and a flooded brook to the south would hardly upheave the "floor" from the north; *A* is a mass of London clay and sand, brought from a distance and pushed under the "floor" by the advancing "trail" from the north. Where the "floor" has been crumpled and disturbed, the implements show a very slight amount of abrasion; where the "floor" is unmoved and covered by the stratified sand or mud of the Lea, the tools and flakes are all as sharp as on the day they were made.

Very near the sections already illustrated, viz., at 270 yards west by north from Clapton Railway Station, and just south of Caroline Street (marked on Stanford's Library Map of London), one or two other excavations have recently been made; these show admirable sections of characteristic "warp and trail." At fig. 9, Plate XI, a section facing south is engraved to scale, and at fig. 10, Plate XI, the end of the section is further enlarged to show the "warp and trail" above and the horizontal stratification below. The section is 11 feet 6 inches deep, and just reaches the top of the stratum of gravel, which contains abraded implements intermediate in age between those of the "floor" above and those found at from 20 feet to 30 feet from the surface. The "Palæolithic floor" on fig. 9, if present, would be just above the horizontal bands of stratification, but the trail at this spot has swept it away; it, however, occurs in a perfect state with

its implements only a few yards to the south. Beginning at the top, the reference letter *R* is humus; *Q*, mud belonging to the "trail"; *P*, a pocket of London clay; *O*, "trail"; *N*, Palaeolithic sand and loam, crumpled and disturbed by the trail; *M*, dark sand and clay; *L*, light sand and clay; *K*, dark sand and clay; *J*, yellow sand; *I*, red sand; *H*, light sand and clay; *G*, dark sand and clay; *F*, red sand; *E*, yellow sand; *D*, red sand; *C*, sand, almost white; *B*, buff sand, sometimes full of the fossil shells of land and fresh-water molluscs. These sands represent the sandy margin of the old Thames, now four miles distant from this spot.

The bed of gravel marked *B* on fig. 7, Plate X, and *A* on fig. 10, Plate XI, is found at north-east London, at an average depth of 12 feet, and descends to 20 feet and even 30 feet; this drift contains, chiefly in its upper parts, lustrous sub-abraded implements of medium age. All the tools have been more or less moved and rolled by water; none are quite unabraded; bones, teeth, tusks, antlers, and driftwood occur. The deposit has been described by Professor Prestwich, in the "Quarterly Journal of the Geological Society," 1855, Vol. XI, p. 107. The material is remarkable for containing immense blocks of sandstone, probably never moved by water alone; that these stones fell from floating blocks of ice seems extremely probable. One example at Stamford Hill measured 1 foot 5 inches by 1 foot 4 inches by 9 inches; another at Stoke Newington measured 1 foot 6 inches by 1 foot by 1 foot; some of the sandstones exhibit glacial striæ. A block of white quartz seen by me at Shacklewell measured 1 foot 2 inches in diameter. At Hackney I have seen sandstone blocks weighing 2, 3, 4, and even 5 cwt. each, excavated from the lower gravel. These blocks must have been brought from the north and north-west long prior to the deposition of the "warp and trail," and probably long after certain other immense blocks found at the bottom of the 20 feet and 30 feet deposits of gravel were laid down. The stones forming the Lea gravel are chiefly derived from the glacial beds at North Middlesex and South Herts. The flints are generally sub-angular and abraded; hornblende granite sometimes occurs with silicified wood; white quartz, quartzite, sandstone, Lydian stone, and various fossils form the chalk, greensand, London clay, and other deposits. Generally in the deepest pits the third, and, as I believe, the oldest, class of Palaeolithic implements is found: the examples are not sharp, like the implements from the floor, or slightly abraded and lustrous, like the implements found on the top of the 12 feet stratum at Stoke Newington Common; they are, on the contrary, greatly abraded, rude in manufacture, and deeply ochreous in colour. None of the implements in the two first positions, unless "derived," are ochreous.

The disposition of the river-gravels is shown on the geological maps which show the superficial deposits ; they need not therefore be referred to here. I have, or have had, implements from Clerkenwell, Drury Lane, Gray's Inn Lane, London Fields, Dalston, Kingsland, Homerton, Hackney, Lower Clapton, Upper Clapton, Mildmay Park, South Hornsey, Abney Park Cemetery, Stoke Newington, Shacklewell, Stamford Hill, Tottenham, Edmonton, Enfield, Forty Hill, Waltham, and Cheshunt, on the west bank of the Lea ; and from Plaistow, Stratford, Leyton, Leytonstone, Wanstead, Walthamstow, Higham Hill, West Ham, Forest Gate, and Upton, on the east bank. Leaving the Lea valley for the Roding, I may add Barking, East Ham, and Ilford, and, further east still, Rainham, Grays Thurrock, Little Thurrock, Tilbury, Mucking, Orsett, Southend, and other places. All these localities were first lighted on by myself, for no implements had been traced with any certainty to the Lea or Roding till I found them *in situ*. Mr. John Evans records the finding of two implements in the valley of the Stort, one near Bishop's Stortford and the other two miles further to the north, near Pesterford Bridge. I also have an implement, found by myself, from *low-level* gravel belonging to the valley of the Lea at Ware.

Fossil bones, antlers, horn-cores, tusks, and teeth are not very common in the gravels and sands of north-east London ; when they do occur they are almost invariably in a broken or fragmentary condition. Although some examples are very hard and heavy, others are so soft and friable that their removal is impossible. I have sometimes seen groups of bones—or rather the changed remains of them—on the Palæolithic floor, but the slightest touch has been sufficient to reduce them to fine dust. Such groups of bones could only be preserved and removed by the superincumbent sand being carefully moved and hot gelatine poured from the top, over and into the softened mass. Sometimes the larger bones are found broken into fragments and quite flat in the stratified sand ; when the fragments are gathered together and joined, the bones take their natural curves as in the scapula of the mammoth in my collection. It is common to find the bones in connection with flint flakes and implements, and it is also common to find the fossil shells of land and fresh-water molluscs adherent to them. The bones sometimes show signs of possible hacking, cutting, and gnawing, but I have never been able to satisfy myself of the presence of such marks as dating from Palæolithic times. The bones differ from each other in hardness and colour according to the matrix in which they are found. It often happens that ferruginous gravel, fine (almost white) sand, and clay, occur in close contiguity in thin seams ; therefore the bones in such places, although close

together, differ widely in external appearance, and one might think, from a cursory examination only, that they came from wholly different and distant deposits. I have seen bristles and adipocere with the bones. Sometimes pieces of fossil bone, horn, and ivory may be seen in the streets with the gravel. I have a small piece of mammoth tusk and an implement that I found in the sand thrown out of a grave in Abney Park Cemetery.

The fossil remains of the following animals have been found in the gravels, sands, and brick-earth at and near London. A vast number of others might of course be added were it possible, without great difficulty, to identify the innumerable fragments of bone, and the bones in a soft condition.

Man is at present only represented by his numerous works, but I have little doubt (although there is no positive proof) that I have seen human remains in a flat and powdery condition.

CARNIVORA—

1. Lion, *Felis spelæa*. Goldf.
2. Wild cat, *Felis catus ferus*. L.
3. Hyæna, *Hyæna crocuta*. Zimm.; var. *spelæa*. Goldf.
4. Wolf, *Canis lupus*. L.
5. Fox, *Canis vulpes*. L.
6. Brown bear, *Ursus arctos*. L.
7. Grisly bear, *Ursus ferox*. L. and C.
8. Otter, *Lutra vulgaris*. Erxl.

PROBOSCIDEA—

9. Mammoth, *Elephas primigenius*. Bl.
10. Straight-tusked elephant, *Elephas antiquus*. Falc.

UNGULATA—

11. Horse, *Equus caballus*. L.
12. Big-nosed rhinoceros, *Rhinoceros megarhinus*. Chr.
13. Small-nosed rhinoceros, *Rhinoceros leptorhinus*. Owen.
14. Woolly rhinoceros, *Rhinoceros tichorhinus*. Cuv.
15. Wild boar, *Sus scrofa ferox*. L.
16. Hippopotamus, *Hippopotamus major*. Cuv.
17. Stag, *Cervus elaphus*. L.
18. Roe, *Cervus capreolus*. L.
19. Reindeer, *Cervus tarandus*. L.
20. Irish elk, *Megaceros hibernicus*. Owen.
21. Urus, *Bos primigenius*. Boj.
22. Bison, *Bison prisca*. Boj.

RODENTIA—

23. Beaver, *Castor europæus*. Owen.
24. Water vole, *Arvicola amphibia*. Owen.

The musk sheep (*Ovis moschatus*, Desm.), and the pouched marmot (*Spermophilus citellus*, Pall.), have not yet been detected on the north of the Thames.

The following is a list of the fossil shells of fresh-water molluscs found in the sand at north-east London. Dr. J. Gwyn Jeffreys has kindly named many of them for me. The list is compiled from my own series, and from those published by Prof. Joseph Prestwich and Dr. John Evans.

CLASS I.—CONCHIFERA, OR BIVALVES.

ORD. I.—LAMELLIBRANCHIATA.

FAM. I.—Sphæriidæ.

1. *Corbicula fluminatis*. Müll.
2. *Sphærum corneum*. Linn.
3. *Pisidium amnicum*. Müll.
4. " *fontinale*. Drap.; var. *Henslowana*. Jeff.
5. " " " *pulchella*. Jeff.
5. " *pusillum*. Gmelin.
- " " var. *obtusalis*. Jeff.

FAM. II.—Unionidæ.

6. *Unio tumidus*. Phil.
7. " *pictorum*. Linn.

FAM. III.—Dreissenidæ.

Non.

CLASS II.—GASTEROPODA, OR UNIVALVES.

ORD. I.—PECTINIBRANCHIATA.

FAM. I.—Neritinæ.

Non.

FAM. II.—Paludinidæ.

8. *Bythinia tentaculata*. Linn.
9. *Hydrobia marginata*. Mich.

FAM. III.—Valvatidæ.

10. *Valvata piscinalis*. Müll.; var. *subcylindrica*. Jeff.
11. " *cristata*. Müll.

ORD. II.—PULMONOBRANCHIATA.

FAM. I.—Limnæidæ.

12. *Planorbis nitidus*. Müll.
13. " *nautilus*. Linn.
14. " *albus*. Müll.
15. " *marginatus*. Drap.
16. " *glaber*. Jeff.
17. " *spirorbis*. Müll.
18. " *carinatus*. Müll.
19. " *complanatus*. Linn.
20. " *contortus*. Linn.
21. *Limnæa peregra*. Müll.
22. " *auricularia*. Linn.
23. " *stagnalis*. Linn.
24. " *palustris*. Müll.
25. " *truncatula*. Müll.
26. " *glabra*. Müll.
27. *Ancylus fluviatilis*. Müll.
28. " *lacustris*. Linn.

TERRESTRIAL.

FAM. I.—Limacidæ.

Non.

FAM. II.—Testacellidæ.

Non.

FAM. III.—Helicidæ.

29. *Succinea putris*. Linn.
30. *Zonites radiatulus*. Ald.
31. " *nitidus*. Müll.
32. " *chrystallinus*. Müll.
33. *Helix aculeata*. Müll.
34. " *nemoralis*. Linn.
35. " *arborum*. Linn.
36. " *rufescens*. Penn.
37. " *concinna*. Jeff.
38. " *hispida* (?). Linn.
39. " *pulchella*. Müll.
40. *Pupa umbilicata*. Drap.
41. " *marginata*. Drap.
42. *Clausilia biplicata*. Mont.
43. *Cochlicopa lubrica*. Müll.
44. *Achatina acicula*. Müll.

FAM. IV.—Carychiidæ.

45. *Carychium minimum*. Müll.

FAM. V.—Cyclostomatidæ.

Non.

Dr. Jeffreys has been good enough to add the following note:—
 "The occurrence of *Pisidium fontinale*, var. *Henslowana*, as well as the *tout ensemble* of all these fossil shells, induces me to believe that they have been thrown up by the floods on the banks of a large river such as the Thames."

In describing the implements of north-east London it will be convenient to take the surface *humus* first, and proceed from the newer to the older deposits. The *humus* of the district under description contains in every part Neolithic implements: celts, polished and unpolished, arrow-heads, scrapers, flakes, hammer stones and cores; they are, however, in no place common; they are generally greyish in colour, not usually dark, and not as a rule very lustrous, but exceptional examples as to colour and lustre occur.

After the humus of one or two feet, with its Neolithic implements, is removed, the "warp and trail" is reached; this material contains Palaeolithic implements and flakes of different ages, and in all stages of abrasion and decomposition, and fixed in the clay at various angles—I have seen them upright. These implements have been ploughed up by the "warp" from other districts or swept up from old surfaces and laid down by frozen mud in the positions where they are now found. They belong to all three of the series mentioned in the following notes.

Under the "warp and trail" the "Palaeolithic floor" is met with, sometimes as near the present surface as 2 or 3 feet, sometimes as deep as 10 or 12 feet, sometimes in duplicate. The depth varies according to the contour of the old land surface, or according to the floor being rendered deep by modern accumulations, or near by denudation, or by the removal of the surface in modern times.

The abundant fossil-shells of land and fresh-water molluscs prove the place to have been at one time close to the margin of a great river, with its tributary streams, brooks, and aquatic plants. The men and other animals lived by the river-side for the convenience of the water. The men, too, were obviously safer in the open places by the rivers and streams than in the adjoining woods in company with wild and dangerous animals.

There must have been an enormous number of Palaeolithic men living on the "Palaeolithic floor" at north-east London, as is

proved by the number and variety of the stone weapons and tools found upon the "floor." Although not a ten-thousandth part of the "floor" has been excavated, yet in a five years' examination of excavations for new houses and drains (over a very limited area, and in erratic spots), more than one thousand implements of stone have been found. In addition to the so-called ordinary weapons and tools, vast numbers of scrapers have been found, together with knife-forms, as fig. 11, Plate XII, chopper-forms as at fig. 14, Plate XIII, wedge-forms as at fig. 12, and simple flakes and cores as at fig. 13, in hundreds of thousands. All the illustrations of stone implements, with one exception, are one-half natural size.

It will be noticed that the knife, which is from the "Palæolithic floor" at Leyton, in Essex, is skilfully retrimmed on one side of one edge only.

All the implements belonging to the "Palæolithic floor" are lustrous, often highly so; nearly of the natural colour of the flint, but almost invariably with a slight (almost invisible) tint of ochre. As a rule, every implement and flake is as sharp as on the day it was made. A few, owing to a slight movement of the "warp and trail," are very slightly abraded. As a rule, none are scratched by the movement of other stones upon and around them.

The implements have been found in such positions and with such certainty wherever the "floor" has been uncovered that the idea is sometimes forced on one that all the makers of the implements suddenly left the place in fear of some impending danger, and left their tools on the very spots where they were being used. For instance, an accumulation of sharp flakes, several implements, hammer-stones, and what I take to be anvil-stones, have more than once been found together; the flakes have been replaced, and pieces of implements broken in Palæolithic times have been found near each other, and re-joined in modern times by myself. If the men went southwards in fear, it is clear that the first result to the "floor" was the mere covering by fine river sand, often full of the shells of land and fresh-water molluscs. To the present day these shells are, as a rule, unbroken. Even the large tender shells of *Helix nemoralis*, L., are found perfectly intact; there is not the slightest indication of any violent commotion.

As a rule, most of the implements belonging to the "Palæolithic floor" are very small, thin, and show most beautiful workmanship, sometimes rivalling in fineness and thinness the best Neolithic work. Fig. 15, Plate XIII (formerly No. 403 in my collection, now in the possession of Mr. John Evans), is a typical example; the engraving, however, gives a very poor idea of the fineness, sharpness, and beauty of the tool. Fig. 16 is an exqui-

sitely fine trimmed flake (No. 47 in my collection). Fig. 17, Plate XIV, is an implement (No. 627 in my collection) worked on both sides, the natural crust of the flint being left untouched on the butt; weight, $1\frac{1}{2}$ oz. These are by no means the smallest or lightest of the tools found on the "floor"; several have been found, worked on both sides, that weigh less than half an ounce each, as the one at fig. 18, found by Mr. G. T. Lawrence, and by him added to my collection. Although some implements resemble lance-heads in shape, yet there appears to me to be no evidence whatever that these small stones were ever mounted for use as lances, although they probably foreshadowed lances and arrows. I consider they were all held by the thumb and two next fingers. Fig. 19 is a small and extremely neat scraper (No. 22 in my collection); whilst fig. 20 is a boring tool from the "Palæolithic floor" at Grays Thurrock, found by Mr. Sidney Roberts; this is a keenly pointed and remarkable little tool, which might have been put to disagreeable uses. Fig. 22, Plate XV, is an illustration of the largest tool hitherto found on the "floor" (formerly No. 409 in my collection, but now in the possession of Mr. John Evans). It measures 9 inches by 5, and weighs 2 lbs. $13\frac{1}{4}$ oz. It exhibits glacial striæ on a large patch of original crust on one side, and indicated at *D* on edge view. This implement was found on the "Palæolithic floor" in three pieces, *A, B, C*, by two different men at different times and at different places. If the report given by the finders is true—and I know no reason for disbelieving it—the implement must have been broken in Palæolithic times. The men who found the pieces did not know they would fit together, and the fourth piece, indicated by dots, although sought for, was never found.

An example of two replaced flakes is illustrated at fig. 21, Plate XIV. The front of the conjoined flakes is shown at *G*, and the side at *H*. I found the lower flake two days before, and some distance from where I found the upper one; but as I have a method of placing newly found sharp flakes on a table, arranged temporarily in accordance with their colour and markings, I speedily saw that this upper flake would fit on to the lower one. Each flake has a cone of percussion, as shown at *JK*, and the upper flake has a well-marked depression at *L*, corresponding with the missing flake, which, if it had been found, would have fitted on to the front of the two conjoined examples. Both flakes are sharp and slightly stained with the ochreous river sand which overlaid them. Both (especially the upper one) show unmistakable signs of having been used as scrapers, the upper curved edge (and that edge only) being worn away by use. The worn upper edge of the superimposed flake at *MM* is distinctly shown in the illustration. A small intermediate piece belonging to the

position at *N*, I did not find. Both are naturally mottled in a peculiar manner, and the pattern and colour of the mottling exactly agree.

Implements broken in the course of manufacture, and others broken in use or roughly blocked out to shape, and never finished, have been found in large numbers. As an example, an engraving is given at fig. 23, Plate XVI, of an unfinished implement, merely blocked out, found by me on the "Palæolithic floor" near Bedford; it exactly agrees with similar stones found at Stoke Newington. Nondescript, apocryphal, and curious forms occur, sometimes of small size, at others very large. The illustration at fig. 24 shows a large and heavy unabraded implement, found and given to me by Miss Eleanor A. Ormerod, F.M.S., in gravel and brick earth, thrown out of an excavation made for the new Hounslow and London Railway, immediately south of Osterley Park, near Isleworth. The illustration shows a front and side view of the implement, which is 2 feet long, and weighs 32 lbs. Judging from what I saw of the sections, and by other flints found by me at the same place, I have no doubt of the existence of a "Palæolithic floor" near Isleworth, whence this massive implement and other relics were derived. The more pointed end of the implement illustrated has been rudely but skilfully trimmed to a wedge-like point, towards the base at *A* (seen more distinctly on the right of left figure at same point); the signs of battering or hammering are remarkably distinct. I do not think this battering has arisen from the use of the tool as a club, but rather as an anvil; several flakes have been removed from the extreme butt, and a few small inconvenient asperities have been knocked off elsewhere. Greater part of the flint is covered with the original bark, and this bark is brownish ochreous, its colour proving its derivation from the ochreous gravel. The trimmed parts are lustrous, unabraded, and very slightly stained. The whole condition of the implement exactly agrees with stone tools found on the "floors" at Stoke Newington, Erith, Northfleet, and Grays Thurrock. The tool appears to have been used as an instrument for thrusting, as well as in a horizontal position, as an anvil-stone. It would be idle to mention the possible uses of such a huge tool as this; but every one who has formed ideas of the mode of life of Palæolithic men will readily think of numerous uses to which such an implement could have been put.

Anvil-stones are common on all the "Palæolithic floors" I have seen; one from Stoke Newington is illustrated at fig. 25, Plate XVII, most of them are so large that removal is either impossible or inconvenient by hand. They are known by the distinct marks of hammering seen on some special part of the stone, generally on

a flat surface. The vertical arrows in fig. 25 show the direction of the blows from vertical hammering, and the horizontal arrows the direction of blows delivered on the block in a horizontal direction. With the exception of the bruised and splintered edge, seen between the two sets of arrows, all the other edges of the block are sharp. I was present when this block was exposed on the "floor"; many sharp flakes were found near it, and several quartzite hammer-stones—i.e., quartzite pebbles with the ends abraded off by hammering. One of these pebbles is illustrated at fig. 26 (formerly No. 18 in my collection, but now in the possession of Mr. John Evans). The dotted parts show where the pebble is abraded away. Although these quartzites were undoubtedly used for hammering, I do not believe they were abraded in the manufacture of implements, but chiefly by striking them against blocks of flint to obtain fire. They are most effectual for this purpose, and impossible tools without a punch for anything like small or skilful flaking. Other hammer-stones, of truncated cylindrical pieces of flint, also occur. One from the "floor" at Grays Thurrock is illustrated at fig. 27. It will be observed that the edge of one truncated end only has been splintered away by hammering; the upper part, which was held in the hand, is unsplintered.

For the last six years I have made careful search for examples of carved bone or ivory, needles, fish-hooks, and harpoons, such as are found in some caves with implements similar with the tools found on "Palæolithic floors," but nothing of the kind has rewarded my researches. Even at Stoke Newington, a position at which I was daily present for many months, nothing of the sort, and nothing that could be accepted even as a stone lance or arrow-head, came to sight. Although needles do not occur, small borers of flint are not unfrequent.

In one place a shark's tooth, probably "derived," was found with flakes on the "floor," and in another place the implement-like piece of fossil-bone illustrated at fig. 28, Plate XVIII.

At Bedford I have been more successful, for here I have found a considerable number of examples of *Coscinopora globularis*, D'Orb., that show an artificial enlargement of the natural orifice, and so seem to have been used for personal ornaments, as beads. Dr. Rigollot ("Mémoire sur des Instruments en Silex," p. 16) says he often found small groups of this foraminiferous fossil in one place—just as if, when swept into the river's bed by a flood, the bond which united them together remained unbroken. Mr. James Wyatt, of Bedford, in examining these bead-like fossils ("Geologist," 1862, p. 234), said he had examined more than two hundred specimens, and on making sections of some of them he saw marks which appeared to indicate

"drilling with a tool after the object was fossilised." In 1880 I found over two hundred examples of this fossil at Bedford, with unabraded implements and flakes and carbonised vegetable remains. The finding of the above large number together seemed to lend some confirmation to Dr. Rigollett's view, for it seems unreasonable to believe that so large a number of fossils from chalk could by any possibility find a position in one place in any river gravel. The surface round each orifice of many of the Bedford beads was abraded, as if by the constant contact of the bead next on a string. A few of the beads also had the hole artificially enlarged, as illustrated (actual size) at fig. 30, sometimes at both ends, as at section *A*, sometimes in the middle, as at section *B*, and sometimes at one end only, as at section *C*. The dotted lines in these illustrations show the original natural orifice; the solid lines near the dotted ones show the enlargement by artificial drilling. In some instances the drilling appears to be comparatively fresh; in other cases less so; but it must be remembered that the implements found with them were mostly unabraded, and vegetable remains were found. The specimens were found by myself; they were not touched or manipulated by the workmen; other examples of these beads had one end near the orifice broken away, as if in an attempt to enlarge the opening by breaking the substance of the fossil away, as at *D*, *E*, *F*.

Whilst looking through the fallen material in the pit, the piece of naturally perforated fossil-shell, illustrated actual size at *G*, attracted my attention. The hole is probably due to a shell-boring mollusc, but when I saw the object in the drift I distinctly noticed that a black substance entered at one side of the hole, and emerged at the other; at the moment of picking the object up this material fell to dust, with part of the very friable surface of the fossil-shell. Some of the beads (as seen in section *H*, *J*, *K*, *L*) also bore very distinct traces of a similar black substance within the orifice, although not seen till the sand and part of the black substance itself had fallen out. This black material I took to be the remains of part of the ligament on with the beads were originally strung by their Palæolithic owner, and with this idea in mind I sent some to Mr. A. Hobson, analytical chemist, of 17, Regent Street, for analysis, with the following result.

"The testing for nitrogenous organic matters," wrote Mr. Hobson, "of which animal tissues are composed, was tested in the same manner as testing water for such matter—that is, by converting it into ammonia; precautions were of course taken to eliminate from the results any ammonia already existing. The amount of ammonia was strikingly evident, and showed with each bead

separately. The blackening of the organic matter in the holes of the beads may have taken place in a manner similar to that of the formation of coal."

On testing the beads, which consist chiefly of carbonate of lime or chalk, without the black material in the orifice, Mr. Hobson reported that "when treated in the same manner as those originally sent, they show the presence of a considerable amount of heterogenous or animal organic matter, as was to be expected from their origin, but not so much as those with the black deposit."

Mr. A. Clarke, analytical chemist, of Huddersfield, who also made an analysis for me, reported as follows:—

"I divided the bead into three portions: No. 1, the thin dark crust forming the internal portion of the ring; this is most certainly organic matter. No. 2, a powdery part, between No. 1 and the main body of the ring, consisting of small quantities of carbonates of iron and lime. No. 3, the outer main body of the ring, mostly carbonate of lime, and a small quantity of silica; here there is only a trace of organic matter, but it is most distinctly present."

I have often noticed, in dipping flakes from the "Palæolithic floors" into cold water to remove the superabundance of sand, that the water does not remain as the round point of impact above the cone of percussion, but flows away from this spot as if from grease. The cause of this may be a different disposition of the constituent atoms of the flint at the point where the blow was received.

In making implements, the Palæolithic men no doubt first "quartered" large blocks of flint by splintering them with large and heavy pebbles of quartzite, or some other tough rock. Suitable pieces of splintered flint were then selected for implements, and roughly trimmed to shape with a quartzite pebble at first, with or without a punch, upon an anvil-stone. I believe two persons were always employed upon finishing implements; one person held the implement edge-ways, with both hands upon the anvil-stone, and the second person used both hands in delivering slight but accurate blows upon the edge to remove small flakes; this, I believe, was done with a quartzite pebble, used as a hammer in the right hand, and a small cylindrical flint punch in the left hand. Small punches are frequent on Palæolithic floors, and one is illustrated at fig. 29. It will be noted that the more pointed end is splintered by punching; the truncated end at top is meant to receive the impact of this hammer-stone. The smallest flakes of all were probably *pushed* off by "fabricators," such as are illustrated at figs. 31 and 32, Plate XIX; the unfinished implement was firmly held in

the left hand, and the fabricator in the right, the thumb of the right hand being used as a fulcrum; the minute flakes round the cutting edge of the implement were then pushed off by the obtusely pointed end of the fabricator. When the idea of fabricators first presented itself to me I had seen but few, but on telling friends to search for such things many came to light, some not to be distinguished from Neolithic fabricators. The cone is at the basal end of each fabricator.

During the last summer I lighted on a gang of skilful forgers of flint implements, and their mode of manufacture, which seemed to me to be a perfect one, was the one given above, metal tools being substituted for stone.

Although man's bones have not yet been found on any "floor," evidence of his former presence is well enough marked. At fig. 33, is illustrated a fragment of a fossil antler of red deer (*Cervus elaphus*, L.), found by me, *in situ* with numerous other fragments of horn, bone, and ivory, and keen flakes and implements, on the "Palæolithic floor" near Grays Thurrock. It is interesting as distinctly showing (as I think) a fracture produced by the straight edge of a Palæolithic implement at *A B*. The blow has broken the antler, and the piece broken off is seen at *C D*, not free, as it was in Palæolithic times, but naturally and firmly cemented by a ferruginous deposit into one mass; the fragment of antler is made more interesting by the presence of an impression in the hard ferruginous deposit of the shell of *Corbicula fluminalis*, Mull., at *E*, a shell abundantly found in a fossil state on the same "floor"; *F* is a fragment of antler naturally cemented; *G* is a hard concreted mass of ferruginous sand.

I have a flake from High Lodge, found by Mr. Henry Prigg, of Bury St. Edmunds, that was broken in two upon the sandy ground in Palæolithic times, and the sand forced between the two separated portions. I have made the sand firm with gum-water, and it now shows impressions of the facets of the flake and the ridge, which was between the two pieces.

As the implements from "Palæolithic floors" are generally sharp and keen, and almost of the natural colour of the flint, the circumstance offers a great temptation to forgers. Forgers cannot imitate ochreous, mottled, or white implements where the surface has been changed by decomposition, but a passable imitation is easy with the keen-edged examples. At first, therefore, I was extremely reticent about my discoveries, keeping the Stoke Newington position a secret both from scientific friends and the workmen. For the first two and a half years no person but myself knew anything of the position or its relics. Although I was daily with the workmen not one knew the real object of my quest; I always told the men "bones

and fossils," and I furtively gathered up the implements and flakes with my own hands. At length, however, a workman noticed the implements, and their manifestly artificial origin, and he speedily had an opportunity of communicating his knowledge to men who knew what implements were. I was then obliged to publish the locality, and, with the usual result, a flood of visitors overran the spot and offered bribes to the men for stone tools; the supply was not equal to the demand, so carpenters, plasterers, and masons engaged on the building works varied their proper occupations with forgeries of flint tools; the labourers did not and could not make them, they were not sufficiently skilled. Loafers and boys bought the tools of the mechanics, and the former laid in wait for visitors and sold their spurious antiquities, often for large sums of money. One person, who had read my description of abraded quartzites, explained these objects to the men;—being extremely easy to make, the market was soon glutted with abraded quartzites. Another amateur, equally unwise, descanted on "glacial striae," and in a few days flints and implements marked with forged "glacial striae" were common. Not only did these forged antiquities get into private hands, but they were offered to dealers, and probably bought and re-sold.

It need hardly be said that no archaeologist need be deceived by a forged implement; to a man who knows what a true implement, hammer, or glacial scratch is, there is as much difference between the genuine thing as there is between gold and brass, or diamond and glass. The moral to be derived from the statement regarding forgeries is—be very careful in dealing with workmen, especially skilled mechanics, and boys. As in scientific statements it is commonly of quite as much importance to know who says a certain thing as to know what is said, so with unabraded Palæolithic implements, it is always necessary to know who produces the implements. I have seen genuine Palæolithic implements which have been purchased as belonging to Stoke Newington, which I perfectly well know by their form and character never came from this place,—they possessed local or tribal characters foreign to north-east London.

Excavations have recently been made in Gray's Inn Lane, where the first recorded find of a Palæolithic implement was made. Archaeologists have recently been there looking for tools. Some of the labourers are from north-east London, and they have transferred genuine tools and flakes as well as forgeries from here to there, and sold both as Gray's Inn antiquities.

In dismissing the "Palæolithic floor" and its people, we may glance at the probable social condition of the old inhabitants. We have seen that they lived in close company, in enormous

numbers, over a large area extending for many continuous miles. They were not solitary savages, few and far between, but probably, though savage, a peaceful, timid, playful, inoffensive, and intelligent community, living in friendly intercourse with each other. The abundance of scrapers of Neolithic form shows that they scraped skins for clothing, and so were rudely clad. The *Coscinopora* beads seems to indicate that they wore ornaments. The presence of so many small tools and so few large ones shows that the "Palæolithic floor" people were commonly engaged on somewhat fine and neat work, and not on heavy or murderous work. Few of the implements are suited for weapons; nearly all are obviously tools. I should say the people never attacked wild beasts, but depended for food upon roots and wild fruits and the bodies of small animals, the latter probably slain by stones thrown from the hand. If they consumed the flesh of larger animals or fish, they probably waited till they found a dead or stranded example. The men knew how to produce fire, for I have seen its effects in fragments of burnt vegetable matter. The geometrical accuracy of the implements, and the exceedingly fine work upon them, indicate the possession of eyes used to correct ornamental forms, and of uncommonly light and skilful fingers. The men of the "Palæolithic floors" must have been the direct precursors of the Neolithic men, although I am bound to confess I have seen no distinct connecting link. It is remarkable that, although the men of these "floors" produced chipped edges as keen as knives, yet, as far as our present experience goes, no individual ever thought of grinding or rubbing a flint to a keen edge. The "Palæolithic floor" men were probably the same race as the Cave men, but without the shelter of caves. The "warp and trail" which scoured the surface swept most of the traces of these men and their work away.

There is very much to be yet discovered about these men and their works. I have heard from workmen, but have not myself seen it, that a deep trench, like a ditch, occurs on the stratum I have referred to the "Palæolithic floor" between Hackney Downs and Stoke Newington Common; the men describe it as a long underground ditch filled with sand; in one place a tree trunk was found in it, but I did not see it. Once, when at Bedford, I saw a number of massive stones in a heap, that had been taken from the pit. The men who disinterred them said they found them all in an upright position, and in a row, as if they had been placed underground by men.

About 8 feet under the "Palæolithic floor," and 12 feet from the surface, at north-east London, there is commonly reached the top of a stratum of greater age than the one just described. This is the stratum at *BB*, fig. 6, Plate IX. The constituent

stones are the same with those of the gravel and sand last described, but the blocks are on the average considerably larger; the gravel is sub-angular, somewhat abraded, and lustrous. The naturally broken flints are not ochreous. Broken bones, tusks, antlers, and teeth occur, but they are rare and generally fragmentary. A similar set of fossil-shells with the list already given occurs in the sandy seams, but less commonly.

In this deeper gravel, another series of implements is embedded of much greater antiquity than the last. The additional antiquity is proved not only by the condition of the flint of which they are made, but by the nature and make of the implements themselves. Like the last, these latter implements unquestionably belong to the Thames and Lea. On the "Palæolithic floor," all the implements, as a rule, are small, many exceedingly small, and scrapers are as abundant as the Neolithic scrapers of any British camp. In the deeper stratum, the implements are, as a rule, considerably larger, and scrapers are rare. The horse-shoe scraper of Neolithic form was barely known when the latter gravels were laid down. All the weapons and tools, as a rule, are now highly lustrous, and somewhat abraded. The work upon them, though excellent, is not so fine as the work on the tools from the "Palæolithic floor," and the very fine and neat secondary chipping found on the latter tools is unknown in the lower series.

A pointed weapon, from the deeper stratum at Lower Clapton, is illustrated at fig. 35, Plate XX (formerly No. 588 in my collection, but now in the possession of Mr. John Evans). Sometimes unfinished implements are met with, as the one illustrated at fig. 37, Plate XXI, also from Lower Clapton; at other times tools roughly blocked out, but never finished, are found, as in the example at fig. 34, found by me at Acton, and now placed with other implements in the British Museum at South Kensington.

Occasionally this older gravel approaches the surface, and in rare instances flakes, and even implements, belonging to the older gravel, were found by the "Palæolithic floor" men (in their quest for suitable stones for implements), and retrimmed. I have an old flake retrimmed as a more recent scraper, and other examples of the same class from north-east London. A good example from Bedford of an implement retrimmed at a later Palæolithic period is illustrated at fig. 36, Plate XX. The dotted portion at the base shows the natural crust of the flint; the parts at *B B B* are ochreous, and represent the old work, whilst the flaking at *D D D* is much more recent, and creamy in colour. *E* is a modern breakage, and *F* shows the thickness of the bark of decomposition formed since the second trimming was executed. The

dotted line at *C C* shows the shape of the implement before it was retrimmed. Chopping tools are frequent: they vary in size, and though generally large and heavy, a few are of small or medium size. They are generally somewhat rude, but a few are as well finished as ordinary implements. A good example from Stoke Newington is illustrated at fig. 14, Plate XIII (formerly 482 in my collection, now in the possession of Mr. John Evans). The straight part of this tool, more or less covered with natural crust, was held in the hand, and the semi-circular edge was used for chopping or hacking.

No very small scrapers occur; all are of medium size or large; many like implements—with one edge only trimmed—but the obtuse scraping edge of a scraper, in contrast with the cutting edge of an ordinary tool, is always conclusive as to its nature. A large and heavy scraper, from Hanwell, but made with great skill, is illustrated at fig. 38, Plate XXI. Borers are met with, one from Hanwell is illustrated at fig. 39, Plate XXII. All the tools from this deposit have been moved by water; none are found where they were made.

The tools from this 12 feet deposit indicate that the men who made them were ruder than the men of the "Palæolithic floor"; yet, as we find undoubted scrapers and even horse-shoe forms, borers, &c., in this deposit, it must be conceded that the men knew how to rudely dress skins for clothing. The general largeness of the implements and the absence of very fine secondary trimming show that the men had not yet trained their fingers for the execution of the better class of flint-chipping.

Generally, at the base of the 20 feet and even 30 feet excavations, often amongst immense blocks of sandstone, a foot and a half across, and with a weight of from two to five hundredweight, and where all the stones are deeply ochreous, a third class of implement occurs. Sometimes the large sandstone boulders are on the surface, as the one close to the stile leading to Hanwell from Drayton Green, and pointed out to me by Dr. Maxwell T. Masters, F.R.S. This water-worn block of sandstone is 2 feet 6 inches across, and 1 foot 6 inches deep and wide. The third, last, and oldest class of implement is deeply ochreous in colour and greatly abraded. The abrasion is often so great that it is not at first easy to see that the stones have been manipulated at all; in other instances the artificial working is more distinct. All these implements are rude and, as a rule, furnished with a thick ochreous brown bark of decomposition. These tools are, doubtlessly, as far removed from the last in time as the last were from those belonging to the "Palæolithic floor." In this last series fine work is absent, and distinct knife and scraper forms are never met with. That these tools, which from their

condition might have been tossed about in the sea for ages, belong to our present river systems I consider very doubtful.

An implement of the oldest class, from Leyton, near Stratford, Essex, is illustrated at fig. 40, and another from Canterbury, where seams of ochreous gravel with implements occur, at fig. 41 (formerly No. 100 in my collection, now in the possession of Mr. John Evans). The Canterbury deposits are not dissimilar from the Leyton ones, as the majority of the Canterbury implements are lustrous and but slightly abraded, whereas these brown-barked, abraded examples occur in distinct ochreous, brown seams. It is easy to prove that these brown implements were objects of enormous antiquity at the time when the river gravels of medium size were laid down, as some of them show accidental chippings of the latter age. The Canterbury specimen has been so chipped. The injuries were made when the Canterbury river gravels were laid down, and the chipped parts at *AA* are non-ochreous and lustrous, in the style of the Canterbury implements of medium age. These chips, therefore, on the ochreous bark are as old as the lustrous Canterbury implements. The implement itself is enormously older.

It is not easy to form an idea of the men who made the oldest tools; they were savages of low degree, with instruments suitable only for hacking and battering. As no scrapers or knife-forms are to be found, the men probably knew nothing of dressing skins, and so went unclothed. Although there seems to be a distinct gap between each of the three Palæolithic ages here described, yet such gaps are possibly not real, for implements are now and then found showing intermediate characters. I am not inclined to look upon any of the men as murderous brutes, but rather (like many other wild animals) timid, retiring, and playful creatures.

During the last few years a considerable number of Palæolithic implements and flakes have been found in the so-called glacial gravels of Herts and Essex; but the age of the gravels is not certain, and it seems exceedingly probable that some of the Palæolithic men from the "floor," which certainly occurs as far north as Cheshunt, might easily have walked on to the glacial heights of South Herts, and selected flints from exposed patches of glacial gravel for their tools. Such men would have left chips, and perhaps an occasional implement, in the gravel. A Palæolithic implement, therefore, on the surface of a glacial deposit does not of necessity prove the glacial age of the tool; it may belong to the most recent of Palæolithic periods. The Palæolithic men were not always on the river banks; they now and then ventured inland, and there left relics of their presence. Palæolithic implements and flakes have been found sticking in

the exposed London clay at north-east London, and no one would consider these tools to be as old as the London clay.

It will be difficult to trace the presence of man by his works further back than the rude, greatly abraded, ochreous tools of stone. Before this period man probably used naturally fractured blocks of stone for hacking and hammering, and possibly for sometimes defending himself against other animals.

Description of Plates VIII to XXIII.

- Fig. 1. Map of North-East London, showing the disposition of gravel in the valleys of the Lea and Roding.
 „ 2. Section of North-East London, across the Lea and the Roding.
 „ 3. Section through the valley of the Lea.
 „ 4. Section through the valley of the Roding.
 „ 5. Section through the valley of the Lea, looking north, showing the probable position of the "Palaeolithic floor" prior to the deep excavation of the valley.
 „ 6. Section of the "Palaeolithic floor," north of Stoke Newington Common.
 „ 7. Section through the bed of a brook of Palaeolithic age filled with stratified sand, and surmounted by "warp and trail."
 „ 8. Section of part of "Palaeolithic floor," with trail pushing under and upheaving it.
 „ 9. Sand-pit east of Stoke Newington Common, showing the "warp and trail," over the stratified implement-bearing sands.
 „ 10. Section of the sand-pit in Fig. 9.
 „ 11. Flint knife-form from the "Palaeolithic floor" at Leyton in Essex ($\frac{1}{2}$ natural size).
 „ 12. Flint wedge-form ($\frac{1}{2}$).
 „ 13. Flint core ($\frac{1}{2}$).
 „ 14. Flint chopper-form ($\frac{1}{2}$).
 „ 15. Flint implement from "Palaeolithic floor" ($\frac{1}{2}$).
 „ 16. Trimmed flint flake from ditto ($\frac{1}{2}$).
 „ 17. Flint implement from ditto ($\frac{1}{2}$).
 „ 18. Ditto ($\frac{1}{2}$).
 „ 19. Flint scraper from ditto ($\frac{1}{2}$).
 „ 20. Piercing tool from "Palaeolithic floor" at Grays Thurrock ($\frac{1}{2}$).
 „ 21. Replaced flint flakes from "Palaeolithic floor" ($\frac{1}{2}$).
 „ 22. Large flint implement from ditto, Stoke Newington ($\frac{1}{2}$).
 „ 23. Unfinished flint implement from Bedford ($\frac{1}{2}$).

- Fig. 24. Large rude flint implement from near Hounslow ($\frac{1}{2}$).
 " 25. " Flint anvil " from the " Palæolithic floor " ($\frac{1}{2}$).
 " 26. Quartzite hammer-stone from ditto ($\frac{1}{2}$).
 " 27. Flint " hammer " from " Palæolithic floor," Grays Thurrock ($\frac{1}{2}$).
 " 28. Piece of fossil bone, of the form of an implement, from the " Palæolithic floor " ($\frac{1}{2}$).
 " 29. Flint " punch," from " Palæolithic floor " at Grays Thurrock ($\frac{1}{2}$).
 " 30. *Coscinopora globularis*, D'Orb., artificially enlarged and showing traces of ligament (actual size).
 " 31 and 32. Flint fabricators from Stoke Newington and Grays Thurrock ($\frac{1}{2}$).
 " 33. Fragment of fossil, antler of red deer, broken in Palæolithic times and naturally cemented ($\frac{1}{2}$).
 " 34. Unfinished flint implement, from Acton ($\frac{1}{2}$).
 " 35. Pointed flint weapon from Lower Clapton ($\frac{1}{2}$).
 " 36. Old Palæolithic implement, retrimmed in a more recent Palæolithic time ($\frac{1}{2}$).
 " 37. Unfinished flint implement, Lower Clapton ($\frac{1}{2}$).
 " 38. Flint scraper from Hanwell ($\frac{1}{2}$).
 " 39. Flint borer from Hanwell ($\frac{1}{2}$).
 " 40. Flint implement of oldest class, from Leyton, Essex ($\frac{1}{2}$).
 " 41. Ditto from Canterbury ($\frac{1}{2}$).
 " 42. Illustration of the probable mode of holding, hacking, and chopping tools in Palæolithic times.
 " 43. Illustration of the probable mode of finishing flint implements, with stone hammer and punch, in Palæolithic times; suggested by the plan adopted by successful forgers.
-

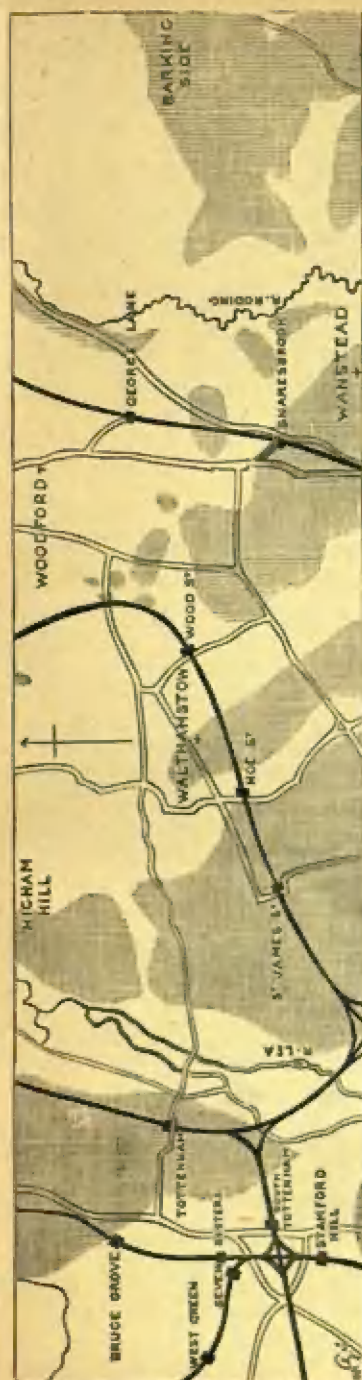


FIG. 1.

MAP OF NORTH-EAST LONDON, SHOWING DISTRIBUTION OF GRAVEL IN THE VALLEYS OF THE LEA AND RODING.

FIG. 2.—SECTION OF NORTH-EAST LONDON, ACROSS THE LEA AND THE RODING.

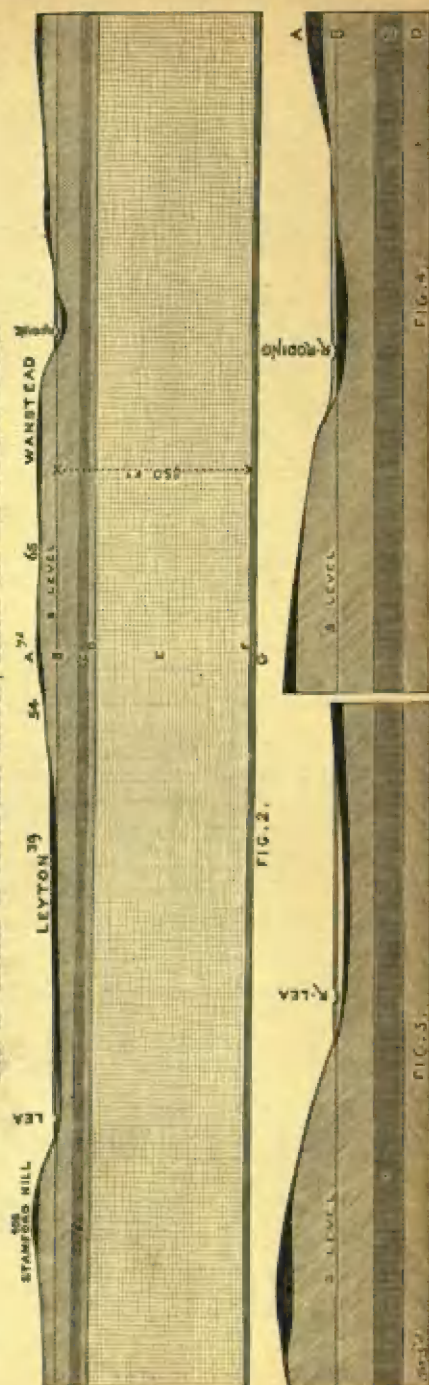


FIG. 2.

FIG. 3.

FIG. 4.

SECTION THROUGH THE VALLEY OF THE LEA.

SECTION THROUGH THE VALLEY OF THE RODING.



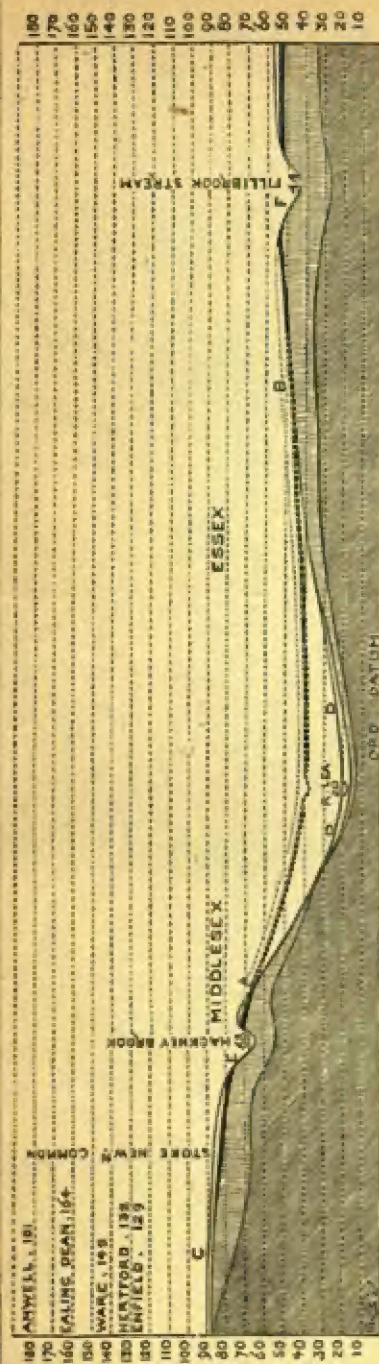


FIG. 5.—SECTION THROUGH THE VALLEY OF THE LEA, SHOWING PROBABLE POSITION OF "PALEOLITHIC FLOOR" PRIOR TO DEEP EXCAVATION OF VALLEY.

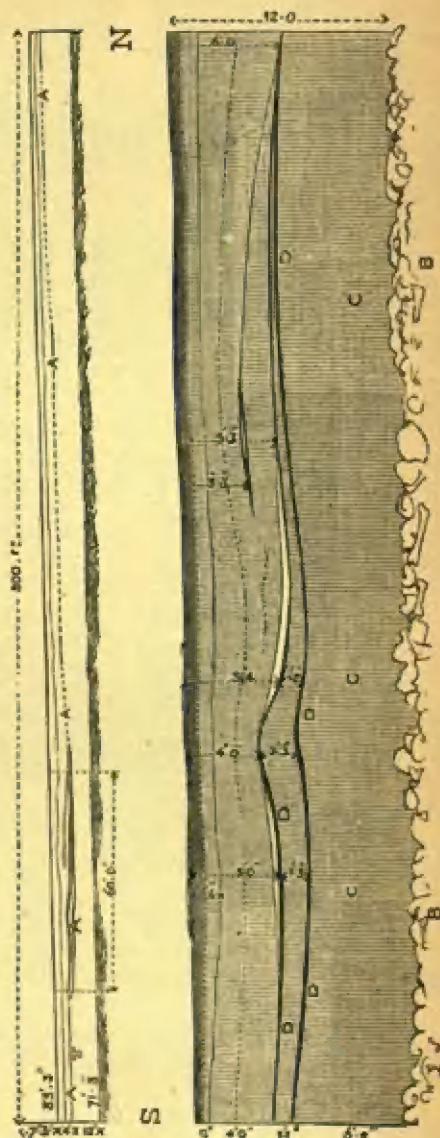


FIG. 6.—SECTION OF "PALEOLITHIC FLOOR," NORTH OF STOKES NEWINGTON COMMON.

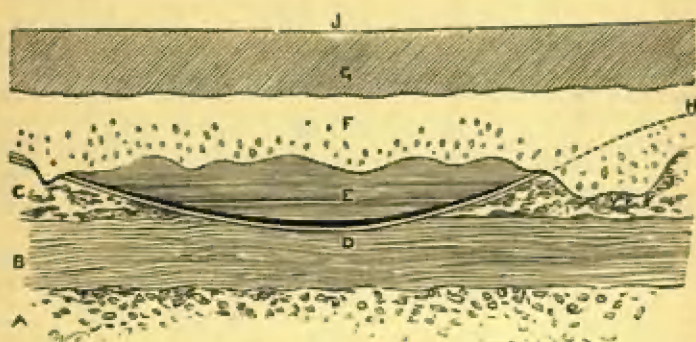


FIG. 7.—SECTION THROUGH BED OF A BROOK OF PALEOLITHIC AGE, FILLED WITH STRATIFIED SAND, AND COVERED BY "WARP AND TRAIL."

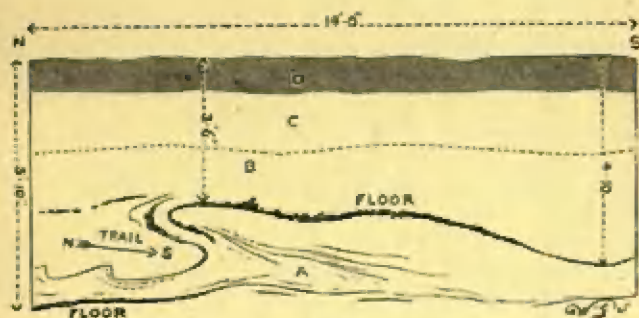


FIG. 8.—SECTION OF PART OF "PALEOLITHIC FLOOR," WITH "TRAIL" PUSHING UNDER AND UPHEAVING IT.



Fig. 1.—A cross-section of the river showing the position of the river bed and the surrounding land.

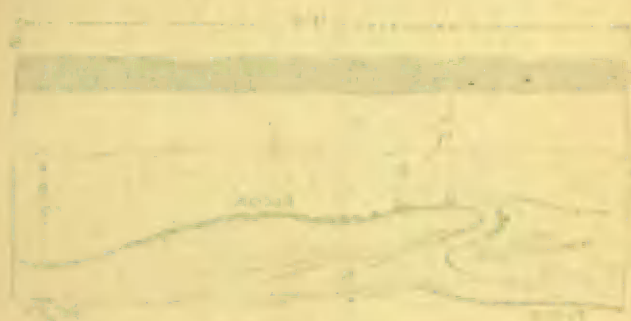


Fig. 2.—A plan view of the river showing the position of the river bed and the surrounding land.



FIG. 9.—SAND-PIT, EAST OF STOKES NEWINGTON COMMON, SHOWING THE "WARP AND TRAIL" OVER THE STRATIFIED IMPLEMETIFEROUS SANDS.

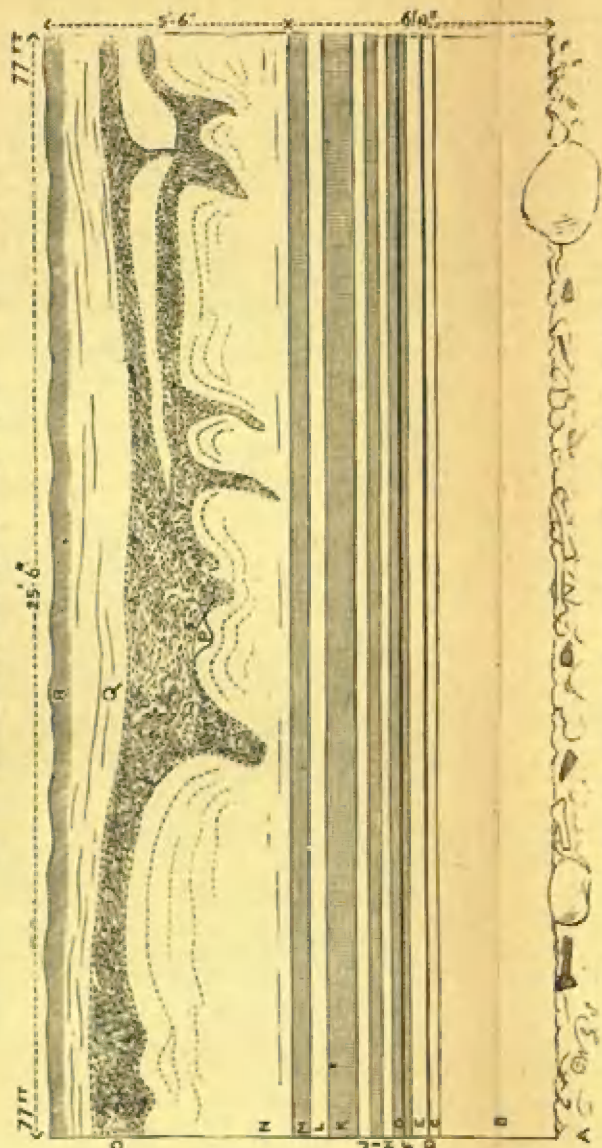


FIG. 10.—SECTION OF END OF SAME SAND-PIT ENLARGED.



FIG. 11.

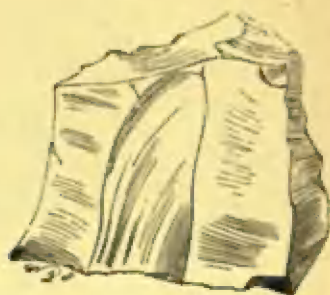


FIG. 13.



FIG. 12.

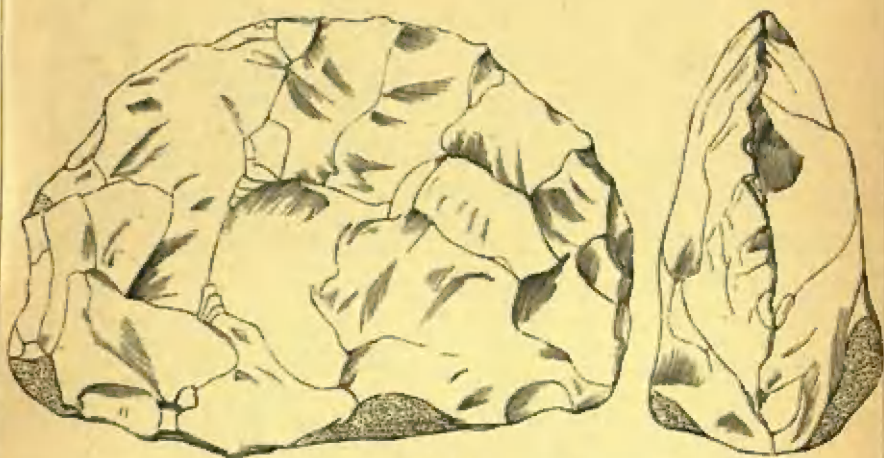


FIG. 14.



FIG. 15.



FIG. 16.



Fig. 11



Fig. 12

Fig. 13



FIG. 17.



FIG. 18.



FIG. 19.



FIG. 20.

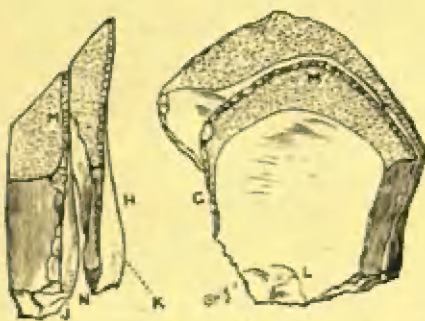


FIG. 21.

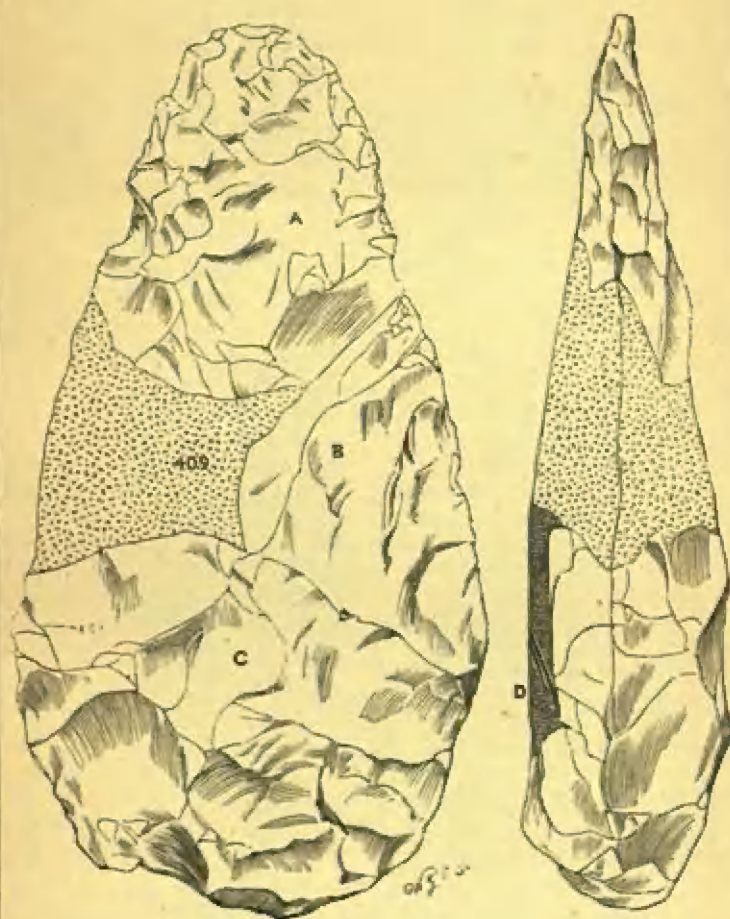


FIG. 22.

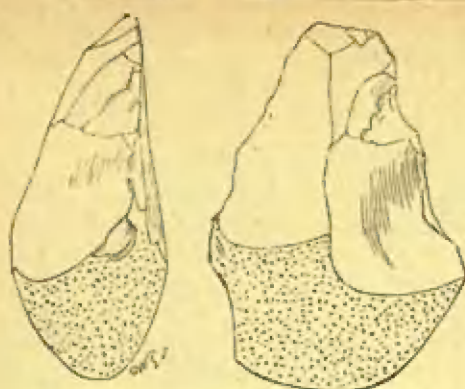


FIG. 23.



FIG. 24.



FIG. 25.

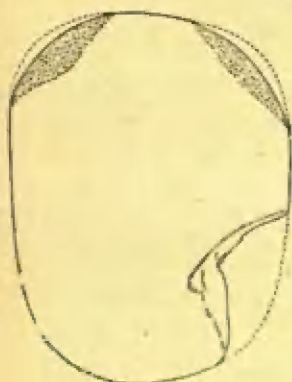


FIG. 26.



FIG. 27.

"ANVIL STONE," AND "HAMMER STONES."

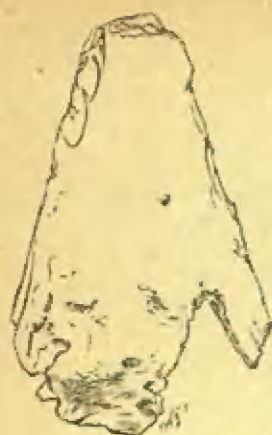


FIG. 28.

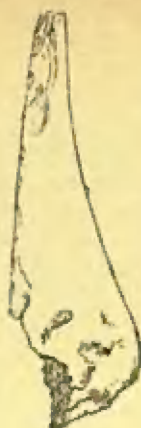


FIG. 29.



A



B



C



D



E



F



H



G



J



K



L

FIG. 30.



FIG. 31.



FIG. 32.



FIG. 33.



FIG. 34.

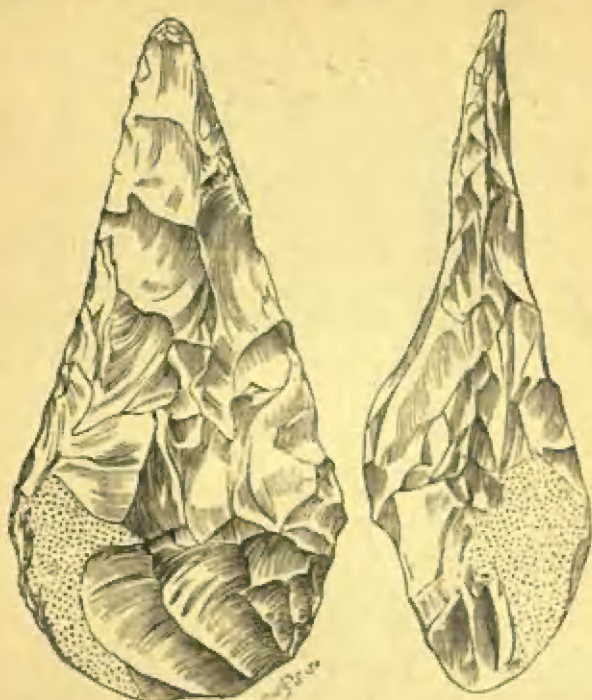


FIG. 35.



FIG. 36.



FIG. 37.



FIG. 38.



FIG. 39.



FIG. 40.

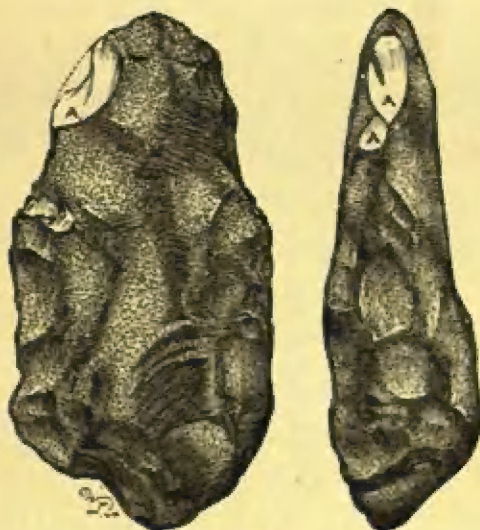


FIG. 41.

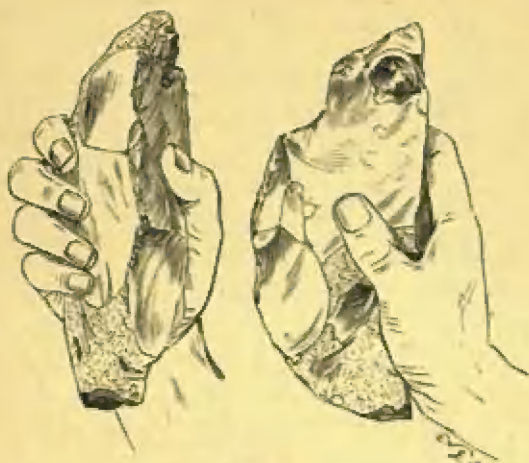


FIG. 42.



FIG. 43.



FIG. 1.

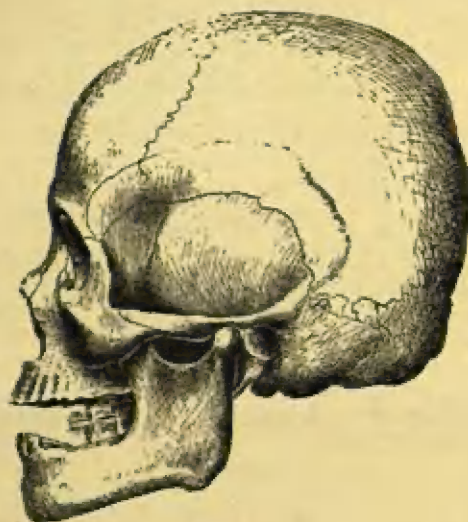


FIG. 2.

THE JOURNAL

OF THE

ANTHROPOLOGICAL INSTITUTE

OF

GREAT BRITAIN AND IRELAND.

NOVEMBER 27TH, 1883.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

- From the AUTHOR.—Among the Indians of Guiana. By Everard F. im Thurn, M.A.
- Hommes Fossiles et Hommes Sauvages By A. de Quatrefages.
- An Account of Elau, a Malayan Papuan Child. By George Bennett, M.D.
- From the GOVERNMENT OF MADRAS.—Report of the Government Central Museum. 1882-3.
- From the GERMAN ANTHROPOLOGICAL SOCIETY. Correspondenz-Blatt. October, 1883.
- From the INSTITUTION.—Journal of the Royal United Service Institution. No. 121.
- From the SOCIETY.—Proceedings of the Philosophical Society of Glasgow. 1882-3.
- Journal of the Society of Arts. Nos. 1616, 1617.
- VOL. XIII.

From the EDITOR.—*Matériaux pour l'Histoire de l'Homme*. 1882,
Nos. 7 to 11.

— "Nature." No. 733.

— "Science." Nos. 38 to 40.

— *Revue Scientifique*. Tom. XXXI, Nos. 19, 20.

— *Revue Politique*. Nos. 19, 20.

The following paper was read by the author :—

On the CRANIAL CHARACTERS of the NATIVES of TIMOR-LAUT.

By J. G. GARSON, M.D., F.Z.S.; Memb. Anthropol. Inst.; Anat.
Assist. Royal College of Surgeons; and Lecturer on Comparative
Anatomy, Charing Cross Hospital.

[WITH PLATES XXIV AND XXV.]

IN the following communication I intend to direct attention to the characters presented by a series of skulls from Timor-laut (a group of small islands situated between New Guinea and Australia) collected and brought home by Mr. H. O. Forbes. Before doing so, it will be well to recapitulate briefly the chief characters of the inhabitants of the islands observed by Mr. Forbes, and described by him in a paper read last session before this Institute, published in its *Journal* (Vol. XIII, p. 8, *et seq.*).

In height both men and women vary considerably, some being of low stature, while others are very tall; on an average, however, both sexes are tall and well developed, especially the men. The usual colour of the skin "is a rich chocolate brown, but here and there amongst them occurs a quite black-skinned individual, who is at once remarkable as being an exception to the prevailing colour." The character of the hair varies likewise in different individuals and in both sexes. Many possess long straight black hair, while others, fewer in number, are frizzly-haired. The men develop scanty whiskers and beard, which they frequently depilate. The forehead is usually slightly retreating, the superciliary ridges prominent; the face somewhat flat; the cheek-bones prominent in some instances among the long black-haired people, but in others little observable; the eyes small and narrow; the brows low. Two distinct forms of nose are observable: the one very flat, between the eyes, advancing with a straight dorsum to a markedly pointed and *retroussé* tip, which shows both nostrils and the septum conspicuously; the other elevated at the base, with straight dorsum, rarely arched, compressed slightly in the middle, "and the tip pointed, depressed, and incurved to form a thick fat septum," the nostrils almost

concealed, and the *alæ nasi* much inflated. The upper lip is prognathous, and the upper teeth usually project beyond the lower, though in many people they meet evenly. "Both men and women chew sirie and betel with chalk, and the latter grind down their teeth almost to the alveoli." The posterior portion of the head has frequently a flattened and deformed appearance. This is especially observed in young persons and infants. It arises from the children being laid in cradles or flat baskets of rattan ropes woven together, with usually only a palm-leaf under them. No sort of binding is applied to the head at any stage of life to cause the deformity.

The osteological remains now to be described were obtained from the island of Larat, and consist of a series of eleven skulls and crania. Of these, nine are adult, one that of a young man of about twenty years of age, and one that of a child.

Four of the skulls appear to be those of males, and six those of women. The skull of the child is not sufficiently developed to indicate its sex. The male skulls are all of a round form—broad in proportion to the antero-posterior length, and resemble one another in general appearance. Of the females, five correspond in form to the male skulls, in being short and broad, but the sixth differs markedly from the others, in being narrow antero-posteriorly in proportion to its breadth. The form of the child's cranium resembles closely that of this last skull. The cranium of the child has been excluded from the various measurements and averages given in the subjoined table, now to be discussed, but that of the young man is included, as I was unwilling to diminish the series by rejecting it, especially as it seems to have attained its full development, except in a few respects which will be noted, though I am aware that it is contrary to custom to include any skull in which the basilar suture is not united. The male and female round skulls are separated from one another, and the latter are grouped apart from the long narrow female skull, many of the characters of which are entirely different from those of the other females.

Capacity.—The average cranial capacity of the four male skulls, measured with shot according to Broca's method, is 1,607 cc., or 47 cc. more than that of male European skulls, the average capacity of 347 of which Topinard found to be 1,560 cc. That of the round-headed females is 1,311 cc., or 64 cc. less than European females skulls, 232 of which, measured by Topinard, averaged 1,375 cc. While the capacity, therefore, of the male skulls from Timor-laut is, on an average, larger than those of European, that of the females is less than in Europeans of the same sex. The difference in capacity between males and females of Timor-laut is 296 cc.; that between Europeans is 185 cc.

The individual range of capacity is considerable, one of the male skulls (No. 10) being no less than 220 cc. smaller than any of the others. The largest capacity, that of No. 4, is 1,780 cc., and the smallest 1,395 cc., that of No. 10. In the females the capacity ranges from 1,405 to 1,240 cc. The difference, then, between the largest and smallest male skulls is 385 cc., and 155 cc. between those of females. The long-headed female has a capacity of 1,400 cc.

Cephalic Index.—In the round skulls the relative proportion of the breadth to the length varies little in the two sexes; the cephalic index of the males averaging 88·1, and of the females 86·0. Reference to the table will show that the lower index of the females is chiefly caused by the almost undeformed cranium, No. 2, which has an index of only 78·9. All these skulls belong to Broca's class of true brachycephalic (skulls in which the cephalic index is over 83·33) except No. 2, which is sub-brachycephalic (between 80·01 and 83·33), on account of its width being less than, while the length is the same as, that of the others. The long narrow female skull has an index of 71·1, and belongs, therefore, to Broca's true dolichocephalic group.

Height Index.—This averages about 2· higher in the male brachycephalic skulls than in the corresponding females, being 80·6 in the former, and 82·4 in the latter. The cephalic index of the males we found was higher by the same amount than that of the females. In the dolichocephalic female the height index is much lower than in the brachycephalic skulls of the same sex, a condition which the late Professor Rolleston found usually to obtain. The height of the skulls is in all instances less than the breadth, except in the female No. 2. The indices of height and breadth above given cannot be taken as strictly accurate, owing to the artificial flattening of the posterior or postero-lateral portion of most of the crania, but are as nearly accurate as circumstances will admit, and general deductions may probably be relied upon.

The height in proportion to the breadth (the latter being taken as 100) is in the males as 91·2, and in the females as 95·6 to 100.

Circumference.—The horizontal circumference of the brachycephalic skulls averages in the males 507 mm., that of the females 475 mm., while the transverse vertical circumference of the former is 456 mm., and of the latter 424·6 mm. The total longitudinal circumference averages in the males 501·2 mm., and in the females 473 mm. In each of the three circumference measurements, therefore, the female skulls are on an average about 31 mm. smaller than the males. The dolichocephalic female shows considerable differences in the various circumferences from the previous skulls of the same sex. Its horizontal and

total longitudinal circumferences are each 25 mm. greater than the average of these measurements in the brachycephalic skulls, while its transverse vertical circumference is 17·6 mm. less. The increased size of the two first circumferences in this skull is due to the greater antero-posterior length of the frontal and especially the parietal bones; the other segments being almost the same in both varieties of skulls. This accords with the fact pointed out by M. Gratiolet, that in women the elongation of the cranium depends essentially on the length of the temporal region, and is the permanent retention of a child-like character; dolichocephaly being due, he has shown, to a relative development of the cranial bones, which varies with age. It is essentially *occipital* in the infant, *temporal* in the child, and *frontal* in the adult man.

The form of the *foramen magnum* varies considerably, being in some elongated antero-posteriorly, in others almost circular.

Gnathic Index.—On an average the male skulls are mesognathous (having an index between 98 and 103); the brachycephalic females belong to the same group. Considerable variety is exhibited individually by the male skulls, one being prognathous and another orthognathous; the same variability is not exhibited by the females, all of them being mesognathous. The dolichocephalic female is prognathous.

Malar Height.—The development of the malar bones is usually somewhat greater in the brachycephalic skulls than in Europeans, but considerable individual variety is observable which confirms the observations of Mr. Forbes on living natives. The malars are small in the dolichocephalic female. The depression on the malar process of the maxilla or maxillo-malar notch, observed by Professor Flower to be present in the Fijians, may here be seen in the skulls where the malars are most strongly developed.

The Orbits.—The form of the orbits varies considerably, some being wider in proportion to the height than others; but the averages show both sexes to be mesoseme (index from 83 to 89).

The Nasal Index.—The form of the nasal aperture presents a certain degree of variation, the index varying from 48·1 to 55·8 in the brachycephalic males, and in the females of that class from 49 to 60·5, the averages of the former being 52 and of the latter 55·3. The average index of the males places them at the platyrrhine end of the mesorrhine group (between 48 and 53), while the females are just within the platyrrhine class (above 53). Two males and three females are mesorrhine, and two males and two females are platyrrhine. The dolichocephalic skull is mesorrhine.

The *Facial angle* formed by the meeting of the alveolar point of the ophryo-alveolar face-line and the auriculo-alveolar base line, averages 70° in the males, and nearly 68° in the females. As differences of opinion may exist as to the value of the angle taken in this way I have added the nasi-alveolar length as well as the basi-nasal and basi-alveolar measurements. With these three measurements the relation of the alveolar point to the cranio-facial axis of Huxley, or basi-nasal line upon which the angle of gnathism depends, can easily be calculated, and the facial angle thus formed aptly compared with the gnathic index. A further reason for the nasi-alveolar length finding a place in the table is that some anatomists, not without good reason, consider it to be preferable to the ophryo-alveolar length as the measurement of facial height, owing to its being more definite than the latter.

Regional characters of the cranial portion.—The glabella is feebly developed in both sexes, being represented by Nos. 0-1 of Broca's descriptive outlines, except in one of the females in whom it is more strongly marked and equals No. 2. The superciliary ridges are likewise feebly marked, there being usually only a slight boss projecting obliquely upwards and outwards from the glabella, but not extending any distance over the orbits. The forehead recedes slightly, but the degree of recession varies somewhat, being more marked in two brachycephalic females than in any of the others; while in the dolichocephalic females it is the most perpendicular. *Tubera* are well marked on the parietal bones of the young male skull, and are associated with a narrow base, as is seen by the bi-auricular breadth being less than that of any of the other males. These conditions are usually concomitant, as was shown by Professor Wiesbach, and are indications of a skull not having attained its full development, as in this case, or of the permanent retention of a child-like character when occurring in the fully adult skull, as is not uncommon in women. Epiteric bones are present in three of the female crania, Nos. 1, 7, and 9. In the male skull No. 10 the squamosals articulate with the frontal, the alae sphenoid not intervening between them, as is usually the case. The zygomatic arches can be seen in most instances projecting beyond the outline of the cranium in the fronto-parietal region—that is to say, the skulls are usually phænozygous, though more so in some cases than in others. In order to estimate the amount of zygomatic projection, or the relation of the maximum cranio-facial breadth to the fronto-parietal breadth at the stephanion, Topinard has suggested the formation of an index from the bi-zygomatic and bi-stephanic breadths, in place of the angle of Quatrefages, which can only be measured by means of a complicated gonio-

meter. Taking the former breadth as 100, I find that the bi-zygostephanic index of the brachycephalic male skulls averages 87·6, and of the female 87·4, and of the dolichocephalic female 94·2. In order to compare these averages with those of other races, I have worked this index out in the series of Andamanese skulls and of Fijians published by Professor Flower, in the volumes of the "Journal of the Anthropological Institute" for 1879 and 1880, and the following are the results obtained :—

Bi-zygostephanic Index.

Andamanese ..	12 males,	88·3;	12 females,	91·5.
Timor-laut ..	3 ..	87·6;	5 ..	87·4.
Fijian ..	6 ..	80·4;	5 ..	85·5.

Before its value can be rightly estimated it will require to be worked out in a much more extended series. It may be stated, however, that crania with a bi-zygostephanic index of under 90 are phænozygous. The development of the inion is usually represented by Broca's descriptive figures 1 or 2. Though not very prominent the inion and the inner or mesial extremities of the superior curved lines are well developed and rugged, a condition to which, Professor Thane kindly reminded me, Professor Ecker has attributed considerable importance as being indicative of a simian character, these ridges being the representative in man of the crests so well marked in the skull of the ourang-outan and other anthropomorphous apes. The sutures are, as a rule, simple, varying in the series from 1 to 3 of Broca's numbers, both in regard to complexity and degree of obliteration. In the dolichocephalic female the frontal suture is metopic, but in none of the other skulls does this condition obtain. The wormian bones are small in most instances. All the brachycephalic skulls of both sexes exhibit more or less flattening in the occipital or parieto-occipital region, such as would be produced by laying an infant, without any soft material under the head, in a cradle, like that exhibited here by Mr. Forbes from Timor-laut. The dolichocephalic female and child's skulls show no sign of flattening. The basilar suture is entirely obliterated in all instances except in the youth; no abnormality is to be observed in any case in the under surface of the cranium.

Regional characters of facial portion.—In most instances the face has a flat appearance. The axes of the orbits are in some instances more horizontal than in others. The inter-orbital portion, though not showing great variation in actual width, differs in form on account of the projection of the

nasal bones being greater, and the ascending process of the maxillaries being flatter, in some instances than in others. It occurred to me that this variation might be expressed by measuring the angle formed by the nasal bones and ascending processes of the maxillaries at the level immediately below that of the *dacryon*. This measurement, which I propose to call the *naso-maxillary angle*, is different in its object from that of M. de Mérejkowsky, which ascertains only the *projection* of the nasal bones or maxillary processes.

The outline of nose is represented by Broca's descriptive numbers 1 and 3. The first of these indicates a nose with a low bridge turned upwards at the tip; the latter a straight nose with a higher bridge than the other. We have therefore identified on the skulls the two forms of nose observed by Mr. Forbes in the living. As a rule the straight nose is elevated at the root and the naso-maxillary angle is higher than in the hooked nose, which is flat at the root. The *nasi-malar* angle is high in all instances. The lower margin of the nasal aperture is usually well defined, but slopes slightly in some instances into the alveolar portions of the maxillæ. The nasal spine is feebly developed, being represented by Nos. 1 and 2 of Broca.

The alveolar portion of the maxillæ has become so atrophied after loss of the teeth in three skulls (one male and two females) as to be reduced to almost a narrow rim of bone; in these the alveolar height has not been measured. A correspondingly atrophied condition likewise obtains in the alveolar border of the respective mandibles. In the others in which the teeth were complete at the time of death this portion of the face is short; the measurements, however, indicate a greater estimate of the vertical distance between the floor of the nose and the alveolar plane than there really is, as in most instances there is a considerable degree of alveolar prognathism. The maxillæ are broad in comparison to their length, especially in the case of the male No. 10, where the maxillary or palatal index is no less than 140·7. The palate is therefore markedly of the parabolic form. In this skull it is also very high. The maxillæ are narrowest in the dolichocephalic female. In all cases the posterior edge of the vomer slopes considerably forwards as well as downwards.

The characters of the mandible can be only imperfectly studied, it being lost in some instances and much atrophied in others. The chief character seems to be the absence of prominence of the chin: the symphesial angle is consequently high, approaching a right angle.

Dentition is normal in all the skulls except the male No. 4, in which the last upper molars, or wisdom teeth, are absent from

non-development. The skull is known, however, to Mr. Forbes to have belonged to a man beyond middle age. The last molars have not been fully acquired in the skull of the youth No. 11. In size the teeth are large but not abnormally so, and are stained black in two of the male skulls, Nos. 4 and 10, and in the female skulls Nos. 7 and 1. In the male No. 10, the upper incisors and canines have been filed away on the anterior surface, and stained black, making them more spade-like. This custom of deforming the teeth, and staining them, is practised very commonly in Java and Birma, and elsewhere. The incisors and canines being absent in the other male skulls, it is impossible to say whether these teeth were deformed in them also. In the females there is a trace of a similar deformation in No. 2, but the filed teeth are not stained artificially. Grinding down the anterior upper and lower teeth, horizontally, and staining them, seems to have been practised in Nos. 1 and 9. In the other skulls the teeth have been lost.

Relation of the inhabitants of Timor-laut to those of adjacent countries.—That the skulls just described are not those of a pure race is very evident. Two very distinct types can be made out, namely, the brachycephalic and the dolichocephalic, the former greatly predominating in number. Both from the information Mr. Forbes has given us as to their appearance, and from the skulls themselves, there is no difficulty in recognising a strong Malay element in the population. The male skull No. 4, and the female No. 6, are typically Malayan in their characters, especially in possessing large, open, rounded orbits, and smooth forehead, the superciliary ridges and glabella being almost entirely absent. The other brachycephalic skulls, though not presenting such a striking affinity, agree more or less with this type, but give evidence of mixed characters. The dolichocephalic skull is, on the other hand, markedly of the Papuan type, and corresponds so closely as to be undistinguishable from two crania obtained twenty miles inland from Port Moresby, New Guinea, in the College of Surgeons' Museum, also from another from the Solomon Islands. Along with this form of skull Mr. Forbes informs me is associated frizzly hair and dark skin.

The examination of the cranial characters of the inhabitants of Timor-laut, as illustrated by the skulls before us, shows that the peopling of this island forms no exception to what is usually found in the various groups of islands in the Polynesian Archipelago. From its close proximity to New Guinea, perhaps more of the Papuan element might have been expected. The relative proportions of the two races in any particular place seem to vary considerably, however, and till more is known of the history of this part of the world, the distribution of its inhabi-

tants will not be understood. Valuable contributions to our knowledge of this vexed question have been made by the writings of M. Quatrefages, Professors Flower and Keane, Mr. Staniland Wake, and others. Series of skulls and skeletons like the present, from different districts, with accounts of the inhabitants, are always valuable additions, and assist materially to unravel the ethnology of this interesting part of the globe.

Explanation of Plates XXIV and XXV.

PLATE XXIV.

Figs. 1 and 2. *Normæ frontalis et lateralis* of the male brachycephalic skull, No. 4.

PLATE XXV.

„ 3 and 4. *Normæ frontalis et lateralis* of the female dolichocephalic skull, No. 1.

All the figures represent the skulls with the alveolo-condylar plane horizontal.

The photozincographs were reduced from drawings by Mr. J. G. Goodchild, the outlines of the skulls from which the latter were made having been previously geometrically projected by means of Broca's stereograph by myself.



FIG. 3.

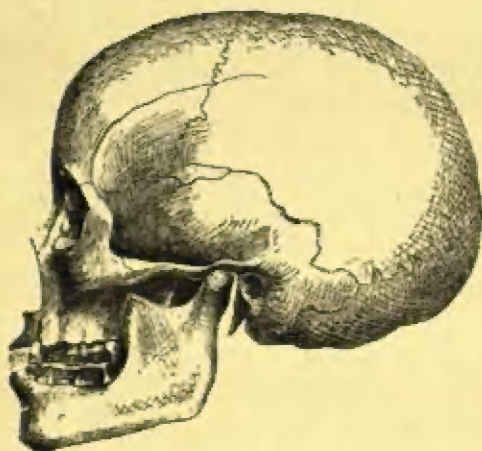


FIG. 4.

CRANIAL MEASUREMENTS.

No.	Sex.	Capacity.	Length.	Breadth.	Height.	Minimum Frontal Breadth.	Maximum Ethyphalic Breadth.	Basilar Breadth.	Bi-auricular Breadth.	Cephalic Index.	Height Index.	Transverse Vertical Circumference.
4	♂	1780	174	157	143	104	130	116	128	90.2	82.2	478
5	♂	1615	170	151	145	102	127	105	134	88.8	85.3	475
10	♂	1395	165	147	131	96	120	104	129	80.1	79.4	433
11	♂	1625	170	151	135	99	*119	103	*117	84.4	75.5	440
Average of ..		1607	172	151.5	133.5	100.2	124	107	127	88.1	80.6	456.5
2	♀	1305	166	131	134	88	106	100	120	78.9	80.7	410
3	♀	1355	165	143	129	95	114	107	119	86.7	78.2	425
6	♀	1405	162	142	137	90	114	108	128	87.7	84.6	433
7	♀	1240	160	141	133	92	115	108	125	86.1	83.1	428
9	♀	1250	156	139	133	88	113	109	119	80.1	85.3	418
Average of ..		1311	161.8	139.2	133.2	90.6	112.8	106.4	122.2	83	82.4	424.6
1	♀	1400	160	128	125	95	115	99	112	71.1	69.4	407

CRANIAL MEASUREMENTS—continued.

	Horizontal Circumference.			Transverse Area.				Median Area.			Foramen Magnum Length.	
	Total Circum- ference.	Pre-auricular.	Post-auricular.	Frontal.	Bregmatic.	Parietal.	Occipital.	Frontal.	Parietal.	Occipital.		Total.
No. 4 ..	521	255	266	284	345	355	245	133	128	119	380	36
" 5 ..	510	250	260	285	332	330	240	130	132	110	372	38
" 10 ..	493	230	263	275	298	320	237	114	123	108	345	35
" 11 ..	504	232	271	270	317	320	230	134	127	111	372	34
Average ..	507	241.8	265	279	323	331.2	245.5	127.7	127.5	112	367.2	35.7
No. 2 ..	473	226	247	261	293	330	245	123	125	100	348	32
" 3 ..	486	225	261	258	301	326	265	119	130	107	356	28
" 6 ..	475	328	247	250	300	325	255	121	123	105	349	38
" 7 ..	478	233	245	262	298	310	227	119	116	97	332	39
" 9 ..	463	215	247	245	293	316	235	122	115	103	340	35
Average ..	475	225.4	249.2	255.2	297	321.4	246.4	120.8	121.8	102.2	345	34.4
No. 1 ..	500	245	255	265	290	300	250	130	140	101	371	34

FACIAL MEASUREMENTS.

CRANIAL MEASUREMENTS—continued.

No.	4	5	10	11	Average	Foramen Magnum Breadth.	Basal- Nasal Length.	Total Longitudinal Circumference.	Basil- Alveolar Length.	Gnathic Index.	Naso- Alveolar Length.	He-gyo- gomatic Width.	Bi-jugal Width.	Inter- Orbital Width.	Height of Face.	Facial Index.	Malar Height.
No.	4	5	10	11	Average	33	102	518	106	103.9	74	137	120	24	102	74.5	29
"	5	"	"	"	"	30	97	507	"	"	"	144	120	22	100	69.5	26
"	10	"	"	"	"	32	98	478	95	96.9	71	140	125	25	105	75	30
"	11	"	"	"	"	27	96	502	95	99	89	122	110	23	94	77	23
Average	"	"	"	"	"	30.5	98.2	501.2	98.6	99.9	"	"	"	23.5	100.2	74	27
No.	2	3	6	7	9	28	98	478	100	102	62	134	113	21	92	68.7	26
"	3	"	"	"	"	28	88	472	"	"	"	124	110	18	"	"	23
"	6	"	"	"	"	29	97	484	98	101	65	133	113	20	93	69.9	23
"	7	"	"	"	"	29	90	467	"	"	"	132	115	18	"	"	21
"	9	"	"	"	"	30	89	464	91	102.2	63	123	108	20	94	76.4	22
Average	"	"	"	"	"	29	93.6	473	96.3	101.7	63.3	129.2	112	19.4	93	71.7	23
No.	1	"	"	"	"	27	93	498	98	105.4	66	122	113	24	94	77	21

FACIAL MEASUREMENTS—continued.

No.	Alveolar Height.	Auriculo-Orbital Width.	Orbit.			Nose.			Maxilla.			Facial Angle.
			Width.	Height.	Index.	Height.	Width.	Index.	Length.	Width.	Index.	
No. 4	22	71	40	36	90	54	26	48.1	57	67	117.5	70°
" 5	..	68	45	36	80	51	27	52.9	..	..	..	..
" 10	20	70	43	34	81	52	29	55.8	54	76	140.7	68°
" 11	16	67	38	34	89.5	*43	23	53.5	52	64	123	72°
Average	19.3	69	41.2	35	85.1	50	26.2	52	54.3	69	127	70°
No. 2	17	68	38	31	86.8	45	27	60	56	66	117.8	71°
" 3	..	62	42	33	73.8	43	26	60.6	..	..	..	..
" 6	15	66	39	35	89.7	50	28	52.9	53	68	128.3	67°
" 7	..	62	39	31	84.6	51	25	49	..	..	..	..
" 9	15	65	35	33	88.6	49	24	49	52	64	123	64°
Average	15.7	64.6	38.6	32.6	84.7	47.3	25.6	55.3	53.7	66	123	67.3°
No. 1	19	68	35	31	88.6	50	25	50	58	64	110.2	68°

Facial Measurements—continued.

Angles.			Bi-xypho- sthephalic Index.	Mandible.								
				Bi-condylar Width.	Bi-gonial Width.	Symphesial Height.	Molar Height.	Coronoid Height.	Gonio- symphesial Width.	Basilar.		
Nad.-Malar.	Nad.- Maxillary.	Basilar.										
No. 4	147°	90°	94.9	125	103	37	27	69	91	61	40	
" 5	145°	105°	82.2	125	95	..	..	59	87	58	30
" 10	139°	116°	85.7	131	102	27	28	63	89	62	32	
" 11	133°	117°	97.5	*114	*93	28	*24	*53	*79	*48	30	
Average	141.2	112.9	87.6	..	..	..	..	..	..	..	33
No. 2	138	95°	..	..	..	..	..	..	..	..	..
" 3	146	116°	91.9	118	94	..	..	60	88	60	34
" 6	142	91°	..	..	..	..	..	..	..	..	..
" 7	146	115°	87.1	125	..	..	..	..	..	55	27
" 9	151	110°	..	..	..	..	..	..	..	..	..
Average	144.6°	105.4°	..	..	..	..	..	..	..	..	..
No. 1	141°	113°	94.2	112	86	34	23	64	88	68	35	

DESCRIPTIVE NUMBERS.

FACIAL MEASUREMENTS—continued.

No.	Angles of Mandible.		Development of Glabella.	Curve of Nasal Bones.	Development of Nasal Spines.	Development of Iulon.	Wear of Teeth.	Size of Wormian Bones.
	Mandibular.	Symphysial.						
No. 4 ..	115°	88°	1	3	1	2	1	1
" 5 ..	120°	..	1	1	2	2	..	3
" 10 ..	110°	83°	1	3	3	2	1	2
" 11 ..	125°	81°	1	3	2	0	0	4
Average ..	117.3°	84°	1	..	..	..	..	..
No. 2 ..	..	..	1	3	2	2	2	4
" 3 ..	115	..	1	1	1	1	..	..
" 6 ..	..	..	0	3	2	0	1	2
" 7 ..	..	..	2	1	1	1	..	..
" 9 ..	..	..	1	3	1	1	3	3
Average ..	..	..	..	..	..	..	..	..
No. 1 ..	117°	92°	0	3	2	0	3	1

NOTES ON THE TABLE OF MEASUREMENTS.

All the measurements given in the preceding table correspond to those recommended by Broca in the "Instructions Cranio-logique" (Paris, 1875), except the following, some of which are not given in that work:—

The transverse arcs.—These are measured with the tape from the point on the ridge at the posterior root of the zygoma immediately above the middle of the external auditory meatus, where the ridge is crossed by the auriculo-bregmatic line (the *courbe sus-auriculaire* of Broca) over the respective parts of the cranium, to the corresponding point on the opposite temporal bone.

Naso-alveolar length.—From the nasion to the alveolar point.

Palatine region.—The maxillary length is measured from the alveolar point to the middle of a line drawn across the hinder borders of the maxillary tuberosities. This is easily done by stretching a piece of fine wire across the back of the mouth, the wire resting on each side in the groove between the pterygoid and the tuberosity. The width is taken between the outer borders of the alveolar arch immediately above the middle of the second molar tooth.

Facial angle.—The angle formed by the meeting of the auriculo-alveolar base line with the ophryo-alveolar face line at the alveolar point measured with Broca's median goniometer.

Nasi-malar angle.—The angle formed by the nasal bones and the external margins of the orbits at a point a little below the fronto-malar articulation.

Nasi-maxillary angle.—Explained in the text, page 392.

Basilar angle.—This is the angle N B Y of the "Instructions," p. 92, or the naso-basio-opisthial angle.

Bi-zygostephanic Index.—Defined in the text, page 391.

Coronoid height.—From the gonion to the top of the coronoid process.

Gonio-symphesial height measured with the calipers.

The size of the glabella, nasal bones and spine,inion, wormian bones, and wear of teeth are indicated by Broca's descriptive numbers given in the "Instructions," Plate I.

An asterisk * is placed against those measurements in the young male skull No. 11, which have evidently not attained their full dimensions owing to immaturity.

A small ° placed before a measurement means *circum*, and implies that the measurement could not be taken exactly.

DISCUSSION.

Mr. H. O. FORBES, in reference to the deformity observed in several of the crania, drew attention to a paper in "Nature" for December 8th, 1881, by Dr. A. B. Meyer, of Dresden, wherein he had given instances of the custom of artificial flattening of the head of children in the Malay Archipelago. Cases were recorded from Sarawak and Celebes which evidently were instances of undoubted intentional deformity; the others from Celebes, Philippine Islands, Sumatra, Timor, and Timor-laut had no authentic history beyond what was deduced from an examination of the specimens. Mr. Forbes thought that it was very doubtful that in all of these the deformity was *intentional*, as it was in the case of the Sarawak skull. During his travels in Sumatra, Mr. Forbes had neither seen nor heard of any instance of this custom; and Marsden, in his "History of Sumatra," says: "The children are nursed but little, and are not confined by any swathing or bandages." In Timor, also, he had instituted special inquiries with regard to the custom; but there, likewise, no one had heard of its being practised, and he had certainly observed none. The cause of the flattening of the crania on the table was certainly non-intentional, and was due to the causes stated in the paper.

The PRESIDENT, Professor THAKK, and Mr. A. TYLOR also took part in the discussion.

The following paper was then read by the author:—

On some of the TRIBES of the ISLAND of TIMOR.

By H. O. FORBES, Esq. F.R.G.S., F.Z.S., Mem. Anthropol. Inst.

[WITH PLATES XXVI AND XXVII.]

CHANCING to be passengers on board one of the Netherlands India steamers in the month of April last year, on our way to the far east of the Austro-Malayan Archipelago on a journey of exploration to the then unknown island of Timor-laut, myself and my wife had the fortune to have as fellow-travellers a most charming Portuguese family, that of Major da França, who was on his journey to Dilly, one of the ports of call of our steamer, to take up the Governorship of their possessions in Eastern Timor. Before parting His Excellency pressed with much warmth an invitation on us to pay him a visit on our return from the Tenimber Islands, offering me, with the utmost liberality, whatever assistance I might need, should I desire to investigate the interior of the island. The offer was a very tempting one, and was acknowledged by us very warmly; but at the time we



Fig. 1.



Fig. 2.

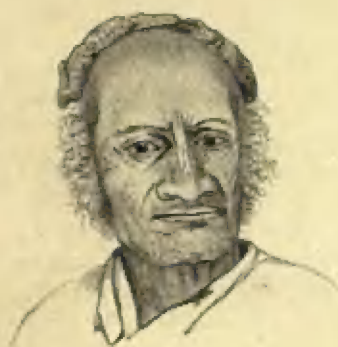


Fig. 3.



Fig. 4.

allowed the project but a small place in our thoughts, for very little prospect presented itself of being able to accept it. Circumstances, however, strangely enough, brought it about that on the 19th of December of the same year, we found ourselves installed as guests under the hospitable roof of the *Palacio* in Dilly, the capital of the Portuguese possessions in the island of Timor.

In the town of Dilly itself the traveller has a fine field for ethnological investigation; for he finds a singular crowd of nationalities other than European, rubbing shoulders with each other in its narrow limits. Tall, erect indigenes mingle with negroes from the Portuguese possessions of Mozambique and the coasts of Africa, most of them there in the capacity of soldiers or condemned criminals; tall, lithe East Indians from Goa and its neighbourhood; Chinese and Bugis of Macassar side by side with Arabs and Malays, men from Allor, Savu, Roti, and Flores. Besides these he will be able to study a crowd almost defying the computation of the variations and combinations that have been rung by the commingling of these numerous races. It is interesting to study the character of each in their unconscious ways among each other. The Hindoo moves about with a superior bearing, and carries with him an unmistakable, uncscious, not offensive air of superiority; the non-dominating, provident, industrious, orderly-disposed Mongolian wends his way, obtaining, rather than asserting, in his quiet way, the next place, and is looked on with respect and good neighbourly consideration. The sturdy *Africano* rollicks about, noisy (generally drunk), careless, improvident, disliked by the natives, who fraternise with none of these interlopers in their land, but keep themselves very much to themselves, lying about in small companies under the trees or on the shore, or moving about in their erect, somewhat sullen, and suspicious way. The Arab leads his secluded life among his own race, energetic, taking many hard cuffs with few words; while the Malays, semi-Malays, and trading peoples fraternise pretty freely with each other on the shore, and over the sides of their prahus.

The shop of At Hing, Major of the Chinese, was one of my favourite study-rooms while in Dilly, for there during the whole day came and went an endless succession of these nationalities, for the purpose of barter, or simply to lounge there, sitting anywhere and everywhere, occupying as often all the chairs reserved for European customers as not, with the utmost *sang froid*, and without for a moment considering that they should give up, on a white man's entry, a place to him. They are exceedingly independent—a trait seen in their erect and bold, almost haughty carriage. A Timorese will rarely stand aside in a

narrow road, to allow you to pass—not from bravado, or as a show of ill-feeling; it is simply innate in him to feel that he is as good as any one, if he be not his own rajah, whom they seem to regard with the utmost deference and respect, if not with servility. In this shop one could study human nature well, and one regrets the difficulty that exists in conveying in written words the life and vigour of such scenes. It was interesting to observe the extreme patience and intense good humour exhibited by the Mongolian, taking down, exhibiting, putting up, discussing its price, over and over again, the same piece of goods to the same individual, who, attracted by a score of different things, would break off without a word, absolutely neglectful of the time—with him the most abundant element in existence—of the Chinaman, to examine them, and enter into a parley, or to join in some argument carried on by his friends in some other part of the shop or outside the door, by-and-by to return to the former bargain, to be broken off time after time, and not to be concluded till one after another of his companions has, in secret consultation, given his idea of the transaction under consideration. When at last he has made up his mind to purchase, or exchange his goods or money for, say, cloth of so many arm-stretches, if he is not of more than ordinary stature, he selects the very tallest man of his acquaintance to be his standard of measurement, and it is amusing to see how he takes advantage of every possible device to expand his chest and arms. Placing the end of the web at the tip of the longest finger of his left hand, and making a gigantic inhalation, he runs his right arm out to the fullest extremity of his finger-tips, invariably succeeding in getting a finger-length or so more as he picks up the mark, from which he will on no account, even though his eyes are never taken off the spot, remove his hand till the cloth has been cut. Should by chance he move his finger the slightest degree the whole measurement must be done over again. Even after the portion he has purchased has been severed it must be measured several times over both by himself and his friends. The suspicious Timorese has wasted his (to him) valueless time, and has satisfied for the moment his fancy; the Mongolian has a profit both on the produce he barter for, as well as on the commodity he disposes of, and by degrees amasses, what the other can never attain to, riches.

Divisions of the Country.—The whole of East Timor is apportioned out under certain chiefs called Rajahs or Leoreis, each of whom is independent and absolute in his own kingdom. At present there are forty-seven of these; but many of them possess a far greater amount of influence than, and exercise a sort of vassalage over, the others. These *kingdoms* are divided into districts, each

of which is called a *Suku*, over which a *Dato* rules, who receives his orders from the *Leorei* by a special officer appointed for that purpose. The *Dato* has under him two other officials, a *Cabo* and a *Tenente*, who assist him in the regulation of the *Suku*.

Dialects.—Crawfurd states that there are in Timor forty different languages. In East Timor, I believe, there are about sixteen dialects; I am not prepared to say they are languages. The following is a list of the names which I have been able to obtain in the region traversed by me, with the districts in which they are spoken:—

<i>Mambia or Kaladi</i>	in	Turscain; Motaël; Hermera; Kaimauk; Hera; Laicor.
<i>Tetu</i>	"	Bariqué; Bibicuçu; Allas; Suai; Hera; Saluki; Laclubar; Bailobo; Cotubaba.
<i>Idate</i>	"	Cairui; Laclubar; Mantutu; Viquequé.
<i>Lokalé</i>	"	Bibicuçu; Kimauk; Vemassee; Barique; Allas; Samoro.
<i>Haukenke</i>	"	Lalea; Vemassee; Mantutu; Fatumarto; Vinilale.
<i>Veke</i>	"	Bailobo.
<i>Vaiqueno.</i>	"	Cova; Suai.
<i>Galolo</i>	"	Hera; Laculo; Motaël; Lalea; Mantutu; Luga; Vemassee.
<i>Marai</i>	"	Manufahi; Rameau; Rolule.
<i>Manobai</i>	"	Allas; Samoro; Tituluru; Turscain.
<i>Kemak</i>	"	Bailobo; Cora; Sanir; Cutobaba; Kailakuk; Attesabe; Boibau; Diribate; Lameian; Maheibo.
<i>Toendade.</i>	"	Boibau; Liquiça; Maubara.
<i>Dagadá</i>	"	Lalea; Faturó; Sarau.
<i>Macassai</i>	"	Luga; Vemassee.
<i>Naubete</i>	"	Luca.
<i>Meadik</i>	"	Faturó; Luga; Sarau.

Characteristics and Customs of the People.—After having travelled from the northern to within a short distance of the southern shore, and seen many of the tribes that inhabit the eastern part of the island, I am quite unable to say to what race they belong. They are an extremely mixed race, and if that dark black colour of skin seen among the Aru Islanders is one of the typical marks of the Papuan race, I have not encountered one true Papuan in Timor. Tall, well-proportioned men, with

frizzled hair and of a rich yellowish brown, or of a chocolate colour, I have seen in great abundance, and short stumpy men, with straight hair on the head, and with no marked lack of hair on the face, are about equally common. W. G. Earl ("The Native Races of the Indian Archipelago," p. 179, 1853) records as especially remarkable the "great differences exhibited by the peoples of the tableland above Dilly." I scarcely knew where he met with the *tableland*, for during the whole of my journey I encountered only pinacles and ridges and precipitous valleys, and wishing for geodetic purposes to obtain a base line of about two hundred yards, I could not find that amount of flat land anywhere! "Some of the natives have a dark yellow colour; the parts exposed to the sun are covered with light brown patches; the hair is straight and thin, and its natural colour reddish, or of a dark chestnut brown. There are also found in Timor all intermediate shades of the skin from dark yellow to black or chocolate brown, and the hair from red and straight to the short and woolly [and in another place "short-tufted"] hair of the Papuas." I have noted often, especially among the children, in Sumatra, auburn hair and hair almost of a reddish brown colour. Red hair is frequent among negroes and mulattoes, and I myself in the kingdom of Bibicu came on a colony living at *Aituha* which had red straight or curly hair, red eyelashes, and the body more profusely haired (of the same red colour) than their neighbours. Those I saw had blue eyes, but I am told that some of them have red eyes. They had round brachycephalic heads. They are not shunned by their neighbours, who, if I am informed correctly, intermarry, both ways, among them. The children take sometimes after the one, sometimes after the other parent. They speak the Lakalé language.

As in Timor-laut, I believe we have here a mixture of Polynesian and Malay races, in about equal proportions; but a reference to Plate XXVI will show this better than any amount of verbal description. The colour of skin, form of head, features of face, character and distribution of hair I met with in every variety and amount of comminglement. In the eastern extremity of the island the people, I am told, resemble Malays, and they speak the Malay language.

Among the Fatumatubia Mountains—I have it on the, as I believe, excellent authority of one of the commandants of the district—lives a race of dwarfish people, speaking a "language" of their own. Their dwarfishness consists not so much in the dimensions of the body, as in the shortness of the limbs, which are thick and strong. They live among the rocks, are great robbers and much detested. The men wear only the T-bandage; while the women go absolutely naked, and when they appear to

trade with other than their own people, they ensconce themselves in baskets up to the armpits. A custom exists among them for the sons to compel their fathers, when they become very old, to join some war or robber expedition, while they attach themselves to the opposite side, and, singling out their own father slay him and claim the reward for his head, as well as the sum paid for his death as a mercenary soldier. The people of one of the sub-kingdoms of Viquequé also go in a state of nudity.

In Láteng the old people live separately from the younger generation, having assigned to them dwelling-places apart.

From what I have observed, I should think that the Timorese are a people capable of attaining to a very considerable degree of cultivation, especially the chiefs and rajahs. In several of the latter I was surprised at the amount of intelligence displayed in comprehending the working of an aneroid and of a thermometer, and even of a prismatic compass which I explained to the Rajah of Turskain. He could not comprehend *why* the needle *always* pointed to one place; and I found myself unable to enlighten him, beyond that *Meromak* made it so! They learn to speak, and even to write, with wonderful facility the Portuguese language.

They are inveterately lazy and sluggish; and Crawford gives them the character of being a weakly people, just from their inactivity, and their not taking sufficient bodily exercise. I am inclined, from what I have seen, to think they are, notwithstanding their meagre, lanky condition, stronger than they are supposed to be; for I have seen them march long distances up steep mountains, carrying heavy loads, without exhibiting any marked signs of distress. They have at least considerable endurance.

Tattooing is not elaborately practised among them. It is mostly confined to a few simple devices on the breasts, wrists, hands, and legs. It is interesting to notice how they have adopted, in the districts where the sea-board influence is felt, the European capital letters as patterns, as well as the monogram I.H.S. intertwined with a cross.

Amusements among them are few, and almost wanting. A game called *Darak-darak* is very common among both sexes, and seems as much a passion among them as chess is among ourselves. They will sit whole days absorbed in it, and it is evidently one requiring some skill. It is played with pebbles or beans, which are being constantly dealt out one by one into a number of small hollows, arranged on the ground; and according to the place in which the last bean of the handful falls, the player either loses his turn or gains a certain number and continues to play. Cock-fighting is also a passion among them.

Where the coast influence has spread, gambling with cards for money is overmastering in its power over them. They will lose everything and then stake themselves, and thereafter engage in a duel for their own release.

They are a vindictive people, as might be expected from their having always had the dealing out of punishments for wrong done to them by their own hands. A man I knew, whose neighbour had by accident (or design) killed his pig, failing to obtain the restitution he demanded, seized his neighbour's child and ran off with it, holding it on his shoulder as a shield against the father should he wish to fire on him, and carried it to the coast, where he sold it, purchasing a horse with the proceeds. I do not know certainly, but I am strongly of impression, from what I know of the character of the people, that the *vendetta* exists among them.

They are excessively given to intoxicants, and for *kanipa* a Timorese can be bribed to do almost anything.

Dress, Accoutrements, and Ornaments.—The Timorese dresses in little more than a head-cloth; but many wear no covering, merely twisting their hair into a knot on the top and back of head, and the ordinary T-bandage made of native cloth about his loins; but he invariably carries with him his *tais*, or plaid, a long piece of thick native-woven cotton manufacture of various colours and excellence according to the district in which it has been made. The rajahs, or *leorais*, dress in almost the same way as the common people, but their costume is distinguished by being of silk, with an elaborate border, in beautiful designs. Only those of royal birth are permitted to wear silk. Instead of the T-bandage, called *hakpolické* the rajahs and higher officials often wear *sarongs*, either of native manufacture or from Malayan or Macassar looms. The Timorese is never by any chance encountered without having over his shoulder-knob his *coi*, or wallet, made of native cloth, suspended by its running cords, elaborately strung with disks of shells, alternating with long dice-like beads of bone richly carved, which serve to open and close its orifice. In this he carries a store of betel-leaves and pinang-nut, with tobacco and other chewing necessities, and the universal bamboo drinking-cup in case in his travels he should meet some friend or acquaintance who has a supply of palm-wine (*laru*) or of *kanipa*, as they name the coarse gin imported by thousands of cases every year into the country. By his side he has always a knife or short sword of some description, and is rarely without a gun, flintlock or percussion, most of them purporting more or less—chiefly less—truthfully to emanate from the "Tower," and initialed "G.R." He often carries, instead of a gun, a bow and a handful of arrows, which in time of war are

said to be smeared with poison. They often carry besides a buffalo-hide shield to ward off stones, which are employed as missiles against each other, as well as knobbed or nail-studded clubs. Those who come from the more westerly part of the Portuguese territory—from about the central regions of the island—are at once recognised by the elegant ammunition pouches of buffalo hide, which they wear round their waist. All tribes wear such pouches, which much resemble in form European cartridge pouches, and are divided into various compartments, in which the native preserves in short bamboo cylinders his gunpowder, caps or flints, shot, and balls of lead or quartz crystals, which he selects from the river beds; but those from near Kota-batoe are studded with large-headed tin nails in a very elegant and ornamental way. Sometimes they are covered, instead, with rows of silver coins of the Dutch mint,—the coinage used in Dilly,—and occasionally even with English sovereigns, affixed by a nail through the centre of the coin.

The women wear very few ornaments: a few arm bands of silver or horn, and occasionally earrings. In their hair, in front of the knot in which it is gathered behind, they wear an elaborately carved comb, exhibiting patterns of considerable complexity and beauty. These are said to be given by the youths to the girls whom they have fancied, and are desirous of marrying, and may represent a sort of engagement token. Their dress consists chiefly of a *lais feda*, or cloth, hanging from the waist to half way to the knees; or it may be suspended below the arms, concealing the breasts. The wives of the rajahs wear the same, but of a finer material, silk or silk and cotton mixed, and more elaborately ornamented. Sometimes they wear in addition a *cabaia* of calico or silk.

Dwellings.—The Timorese do not dwell in villages like the peoples of the Indo-Malayan region, or even as seen among the Tenimber Islanders; but in house-clusters, or in single habitations isolated from their neighbours, and often far removed from all other dwellings. In this respect they may be compared with the people of Bouru, one of the Moluccas, to the west of Ceram. These habitations are situated generally among groves of trees, chiefly on the summits of hills, on crags and ridges, which slope away abruptly on three sides. Single dwellings are usually strongly fenced in by high palings, or strong fences made of longitudinal planks, and bamboos intertwining with posts formed of growing bamboos, whose branches likewise add to its density, guarded by a door, made often of a broad solid slab of wood, swinging on two pivots. Their situations and barricades proclaim the lawlessness of their land—that every man's hand is against his neighbour. Within these fences are conveniences

for housing, as a rule, all the owner's property—ponies, buffaloes, pigs (perhaps his most treasured possession), and goats—in times of alarm; while near the gate, and within the enclosure, there is generally a little hut, in which every night a sentinel remains on guard. One of the objects that early attracts a traveller is the curious little huts that he observes on the tops of the taller *Melaleuca* trees, in the neighbourhood of dwellings. They are granaries, and the storehouse for the more valuable portion of their household effects, such as plates, bowls of European make, and cloths, where it is said they are free from the attacks of rats. These huts are always placed on trees which have sent out four strong branches to opposite points of the compass, and on which, by securely fixing two diagonal planks, they can build a firm floor. It has always, however, seemed to me a strange fact that these are never found within the barricades, but are left in a situation particularly tempting to any prowling thief. It may be, however, that they are otherwise protected by the sanctity of the taboo—or, in their own language, are *lulik*. Their dwellings, are chiefly made of bamboo, erected on pillars, with a verandah in front, and sometimes all round, reached by a trap-stair. In many the thatch reaches down nearly to the level of the floor, and the roof is surmounted by an ornament (see Plate XXVII) which, if not identical with, resembles very closely that common in temples in Fiji, as represented at page 989 of Mr. Wallace's "Australasia," indicating, perhaps, some relationship or communication in former days with the Polynesian tribes. In one of the baskets brought by me from the Tenimber Islands, the lid had the shape somewhat of the roof of a hut, culminating in an ornament of this same form. There are no windows in their houses, and the smoke finds its way out through the chinks in the roof and on the sides. Their dwellings are not divided into apartments, but there are stall-like divisions, which can be closed by curtains, and are used for sleeping in. A spot is always railed off for the *lulik* spear, knife and gun, before which the head of the house makes a propitiatory offering to speed his particular undertakings.

In a few districts, such as in Laicoré, the houses are not erected on poles, but are miserable huts formed of the leaf stems of the sago-palm, let into the ground close together, and secured one to the other by thongs of the blades of its own leaf. In these the seats and sleeping-places are simply platforms raised a few feet above the ground, and under which the pigs and the dogs find comfortable and undisturbed quarters.

Their food consists principally of Indian corn, roasted over the fire, eaten little by little as it becomes ready. Sometimes they boil it, mixed with red rice and *katjang* (*Phaseolus*) beans, highly

flavoured with the most pungent capsicums; but only, as a rule, when they have killed a goat or a pig, whose flesh is stewed along with the corn. They eat also in times of scarcity a species of legume common over the whole island, which they call *kutu*, but which, unless well cooked, is very deleterious, if not poisonous. Sweet potatoes (*batatas*) also form a large part of their diet. They cultivate few fruits except the *banana*; but the *jack-fruit* seems in some places abundant, and is highly prized, especially the seeds, which when boiled taste very much like potatoes, and much resemble those of the seeding variety of the bread-fruit tree (*Artocarpus incisa*). The true bread-fruit tree I did not myself observe, though it is said to grow in Timor in abundance. Cucurbitaceous fruits and various herbs are also eaten by the natives.

To me the most interesting of all their buildings was what they name the *Uma-lulik*, a term which I scarcely know how to translate, other than by perhaps *Pomali house*. I am extremely doubtful whether it is to be reckoned among their really religious institutions or not. Perhaps it has some connection with the practice of the *Taboo*, but whether it has been introduced to the country along with a race that migrated from the Pacific or has arisen *de novo* among themselves I am unable to conjecture. It is just possible that on to their own customs they may have grafted an imitation of some of the rites of the Romish ritual, which has now more or less been known to them for 300 years. If a family cluster consists of several houses, there is invariably one a little distance apart called the *Uma-lulik*; and near the residence of a rajah there is always one large one, which is the *Uma-lulik* of the kingdom. As a rule, however, the tribal *Uma-lulik* is flanked by two others, or by more if the kingdom is large. They almost invariably stand in a cleared space, within a grove of trees, on some elevated spot, surrounded by a thick fence. Within this fence no twig or branch may be broken or cut, no blade of grass plucked, and no stones overturned under the fear of the vengeance of the *lulik*; no tobacco is permitted to be taken within the sacred boundaries, nor horse nor buffalo to stray within it. The buildings themselves are large, carefully built and tended structures of bamboo, raised above the ground on pillars, and possessing two doors, one at the side and one at the end. The *lulik* house can be at once recognised, were it by nothing else than by the buffalo crania with which it is decorated on the outside. An officer who holds one of the highest, and certainly the most influential position in the kingdom has charge of the buildings, and presides over the sacred rites which are conducted in them. He is known as the *Dato-lulik*, or *Rai-lulik*. In times of peace, and on all ordinary

occasions, an old man or woman lives in the building, as a sort of care-taker; such a person is named the *Luliata*. Sometimes an old man and his wife reside all day in it, but they may not both—being of opposite sex—stay all night. It is not very easy to obtain a good idea of the interior arrangements of the *Uma-lulik*, as it is impossible for heretics even to get within it, or often very near it. Even natives of Timor who have become nominally *Sirani* (Christian) are prohibited from entering it; but by sedulously questioning various persons intimate with the arrangements I was able to gather that of the two doors (whose direction does not seem to be a matter of importance), one is reserved for the *Dato-lulik*, or chief priest, and the other for the persons consulting the fates to enter. By the *Dato-lulik's* door no one but himself may enter; it opens into a portion railed off by ornamented wooden pillars from the larger portion of the building, into which the people are permitted. In the smaller part are preserved different articles of veneration—the cranium of a buffalo, a spear, a shield, a chopper, a gun (almost falling to pieces, and of an old, old pattern, my guide told me, “yet it is more powerful than any other gun, however new”); besides these there is a bag containing the vestments of the priest, which are a broad band of scarlet cloth for his head, a circular breastplate of gold, worn suspended on the neck; two gold discs, about 15 centimètres in diameter, to cover the ears; a broad crown of gold, with two long buffalo-like horns of the same material projecting from it, and gold armlets and earrings. Within this enclosure there is, besides, the most sacred object of all—the *ratu-lulik*, or stone on which the offerings are laid to the invisible deity. This stone they believe to have been given to the people of Timor for this purpose when the universe was made. In the larger portion of the building there is a fireplace, and vessels and cooking utensils sacred to the use of the *Uma-lulik*.

The different buildings are fitted up in the same way, but only on high occasions is the central one opened. It is kept open during the whole time of war, and in it quarrels arising between the different districts of the kingdom are arranged. If a man has an ordinary sickness in his house, he does not consult either of the larger *lulik* houses, but offers a fowl or a pig to the *lulik*—at a little railed-off portion—in his own house. If he should lose several members of his family, or he be oppressed by any other great distress, he then applies to the priest—“He must speak with the *lulik*.” Then, bringing rice with a pig or a fowl, he enters the *Uma-lulik* with the *Dato*, each going in by his own door. When the *Dato* has put on his proper vestments he kills the fowl or other animal, and having

placed a piece of flesh from its heart and the side of its head on the *vatu-lulik*, or altar-stone, he cooks the rest along with the rice on the fire in the *lulik* house. After both have partaken of this food, the *Dato* converses with the *lulik*, and thereafter turning to the applicant he gives him siri and pinang-nut, with the assurance that the sickness will depart or his difficulty disappear. Before planting their Indian corn or paddy crop, they kill a pig or fowl and give to the *lulik* to eat, both in their own and in the house common to the district. Their greatest ceremonial, however, takes place on the eve of a war. I shall never forget the graphic description given me by my guide, who was a son of one of the high officers of the kingdom of Bibiçuçu, who himself in a late war had been an actor in such a scene, of the selecting by Heaven of those who were to sustain the honour of their country in the field. On the eve of a war, he told me, messengers are sent to every corner of the kingdom and country to summon from wherever he is and from whatever he is employed every man who owes allegiance to their rajah. From the *Uma-lulik* near which we stood, the hill sloped up in a vast shallow, natural amphitheatre, bounded on all sides by precipitous and inaccessible valleys. "Here," he said, "every man of the kingdom collected, each with a fowl in his hand on which to read his fate, until the whole of this hill was full, sitting close together in silence, each man dressed in his war attire, with his gun on his shoulder, his sword by his side and his spear in his hand: they sat row upon row from the bottom all the way up to the top there, round and round." As he spoke his eyes flashed up, and I could picture to myself the wild and expectant mien of the half-savage crowd. "The *Dato-lulik*," he continued, "then appears at the door of the great *lulik* house in all the glittering vestments of his office, with the sacred spear and the gun and the shield beside him, and before them all he sacrifices a buffalo. After placing a piece of its flesh, along with siri and pinang, on the *vatu-lulik*, or altar-stone, he calls on the spirits of their dead forefathers, then on Maromak of the heavens—in other districts the deity is known by the name *Urubatu* and *Laraula*, signifying *sun* and *moon*—and with Him of the earth. Then in turn he calls out every man present singly, who, advancing to the high priest each with his fowl in his hand, gives it to the *Dato-lulik*, who slays it in presence of the assembled company. According as the animal dies with its right foot or its left foot elevated, and according as the colour of the siri juice which the *Dato* expectorates on the brow and breast of the man before him, is bright scarlet or dark, does the Maromak indicate whether he is chosen to fight for his kingdom or destined to stay at home and guard the women. If the right leg of the fowl is elevated, and the siri

spittle is bright scarlet, the omens are in favour of the consultor, who then, turning from the *Dato-lulik*, draws his sword, and brandishing it wildly in the air, exclaims—'I'm a man; I'm a brave,' and takes his place on the hillside apart, along with the chosen. If the left limb of the fowl is elevated, or the siri spittle on the brow and breast of the applicant appears of a dark colour, he stands rejected, and retires crestfallen to a place in another group on the left. Those rejected on the first occasion may re-consult the omens a second time; and if the fates permit them to go to the war, it is probable that they may be wounded, though not killed. If any man who has been rejected, however, dares to venture to the fight, he will certainly, as they implicitly believe, be killed, whereas in the case of those whom the *lulik* has chosen, no bullet or weapon can hurt them. When the number of those who are to fight is complete, their leader is called out before them by the *Dato-lulik*, who, after giving him siri and pinang out of his own mouth to eat, instructs him how to treat the wounded, and to give the dying their last siri and pinang, a supply of which he gives him from that preserved in the *Uma-lulik*. During war the *Dato-lulik* never quits the *Uma-lulik*: his food is brought to him or cooked inside; day and night he must keep the fire burning, for should he permit it to die, disaster will happen to those in the field, which will continue as long as the hearth is cold. He must besides drink only hot water during the time the army is absent, for every draught of cold water would damp the spirits of the people, so that they could not prevail. On the return of the army from the war the *Dato-lulik* goes out at the head of the whole population, who remained behind, to welcome it—the women beating musical instruments, and shouting '*Oswai! Oswai!*' to the men who are returning laden with heads."

Marriage rites and social relations.—The wife of the rajah—he may have as many concubines as he will—must be the daughter of a royal house; she is selected by the people of the kingdom from among the best-looking daughters of some neighbouring rajah. When an agreement has been come to as to the price of the bride between these people or their representatives and the father of the girl—always with the consent of her father's people—the suitor-kingdom sends a deputation to stay and be, as it were, a guard over the prospective mother of their future king, till the price—always a large sum, often as many as 200 to 300 buffaloes, along with herds of horses and goats, of sheep and pigs, of gold in dust and gold manufactured, with piles of native cloth—has been paid. When the money and gold portion of it has been sent to the father of the girl, the future husband is invited, as a rule, to his father-in-law's, where,

after a great feast, at which hundreds of buffaloes are killed, the girl is handed over to her lord and master to be conveyed to his own kingdom. A large escort of her father's people conveys her to her new home, but as long as any part of the price remains unpaid they remain guests there till the remainder is paid; and their duty is daily to remind the rajah that they wish to return to their country, and "is the rest of the price ready?"

If the rajah has a son he by-and-by succeeds his father. If he have daughters only, the eldest becomes rajah *in case*, whose active duties are performed by a lieutenant, and the others may become the wives of neighbouring rajahs. If no rajah offers for them, they may not be married to any one not of royal descent, with the exception, perhaps, and that very rarely, of some of the highest officers of the kingdom. The people of the kingdom choose a husband for their queen. Having fixed their choice on a suitable person in some neighbouring kingdom, they send a deputation to request the permission of its rajah and people for one of his sons to become the husband of their queen. If the proposal is agreeable to them, the selected youth is conveyed to his new kingdom, receives its queen as a gift, and is endowed with the status and rank of a nominal rajah. He must remain in his new kingdom as long as his wife is alive, and his children belong to the kingdom of his adoption. If, however, there are more children than two, a boy, or a boy and a girl, belong to the husband, and are at liberty to return to, and are, in fact, claimed by his father's kingdom, and are the inheritors of his property, while the rest are the heirs of hers. When the queen dies, her consort returns to his father's kingdom, but he can take with him nothing from his wife's home: everything there belongs to her children. If he dies before her, his body is carried to his own family burying-ground; but I am not sure by whom the death and burial feasts are provided. If the Rajah of Bibicuçu, for instance, a district where I resided, on the hills looking down on the south coast, have no children, the people of his kingdom beg the services of a son always of the Rajah of Manufahi, as their rajah, for the payment of a certain sum to his kingdom, as hire. His new kingdom then purchases a wife for him, if he be unmarried. Should the kingdom of Manufahi lose all heirs to its throne, it may demand back again the reigning Rajah of Bibicuçu. If he has children while Rajah of Bibicuçu, or afterwards, they belong to the kingdom which purchased for him his wife, with the reservation just mentioned of a boy, or a boy and a girl, to become his heirs. If, however, the kingdom of Bibicuçu has *bought* and not hired merely the son of the Rajah of Manufahi, he cannot be recalled on a vacancy occurring in his father's kingdom.

People of humbler station can rarely afford concubines; they seem to live happily with one wife. Polygamy does not seem to be practised among them.

In some districts a very singular modification obtains, in which there seem to be husband-clans and wife-clans, reminding one of the customs prevalent among some of the Australian tribes. It does not hold in all districts of Timor; but I became acquainted with it in the kingdom of Bibiçuçu. To the west of this kingdom lies the neighbouring one of Manufahi, and to the south-west that of Allas. The men of Manufahi cannot *purchase* wives from Bibiçuçu, but the men of Bibiçuçu can obtain wives by barter from Manufahi. The women of Bibiçuçu can obtain husbands from Manufahi, if these men come and live during the lifetime of their wives in the kingdom of their wives. No *purchase* money may be paid, and none may be accepted. The son of the Rajah of Manufahi may marry the daughter of the Rajah of Bibiçuçu, but he cannot on any condition obtain her by purchase, nor is it permitted to her to settle in Manufahi; he must remain in Bibiçuçu during her lifetime.

Saluki and Bidauk are two districts of the kingdom of Bibiçuçu. The men of Saluki can marry with the women of Bidauk, and take them back with them to Saluki; but they must purchase them, and it is not in their option to remain in Bidauk with their wife's relatives instead of paying. On the other hand, the men of Bidauk can marry with the women of Saluki; but the man must go to Saluki and live in the house of the woman, and he has not the option of paying for her at all. The disposition of the children is the same as we have mentioned above. These restrictions, however, do not hold, for instance, with a man of Saluki if he select a wife from a kingdom which is not related in this curious way to his own kingdom; also, as far as I am able to learn, Manufahi men may take wives from Allas—or Allas men from Manufahi—on paying the ordinary price demanded in these kingdoms for a wife without incurring any restriction as to residence. The Timorese apply the name *Vasumanni* to the husband-giving, and *Fetasan* to the women-supplying clan.

In some districts the people are divided into three classes, between which no distinction can be observed—*Uma Bôôl* (great house), consisting of members of the royal house and their descendants; *Uma Klara* or middle class people; and *Uma Kiiki* (little house), the lowest class. In other districts they sometimes select in the case of a vacancy one of their own number to be rajah. If the choice should fall on a man who belongs to the *Uma Kiiki*, the people must pay a large amount to his family to constitute or, as it were, raise him to a member

of the *Uma Bôôt*, of which, when once a member, he remains always a member. If their choice should fall on a member of the *Uma Klara* a less sum in gold, buffaloes, or cloths is necessary to constitute him a member of the highest class. So if a man belonging to the *Uma Klara* wish to marry a woman of the *Uma Kiiki* he has comparatively less to pay for her than if she belonged to the *Uma Klara*.

Chiefs and *Datos* all possess domestic slaves, but they are treated by no means harshly. Their manumission can be obtained at any time by paying a fixed fee, when strangely enough—I give it on De Castro's authority—the slave at once succeeds to the rank of his former master, a slave of a *Dato* obtains the rank of a *Dato*; a slave of one of the people becomes one of the people. The slave of a rajah, however, becomes a *Dato*, not a rajah. This arises, perhaps, from the fact of their being recognised as one of the family of the manumitter. Slaves, however, seem rarely to demand their freedom. Life is not of such a rosy tint as to induce them to change their certain rations and easy treatment for the more uncertain results of the equally hard, if not harder labour of their own hands. I observe, on the same authority, that another kind of slavery exists, in which the slave is the slave of the kingdom and not of an individual. They cannot be sold by the king. This is named *Latûm*. Without, however, a better knowledge of the language than I possessed, it was difficult to obtain accurate information on the working of these intricate systems.

As to the rites performed at the birth of children I have not been able to obtain any very reliable information. It seems quite certain that the head is not compressed in any way during infancy, in the eastern part of Timor, at all events.

Land and division of property.—All the land appears to belong to the *leorei*, or rajah. Each man may cultivate what he wills; but he has no rights in the land. Of a man's property the children of his wife inherit two-thirds; and those of the concubines one-third. If at the death of his father the eldest son have left his father's house and gone to another kingdom, or gone to live with his wife in another house, or has separated from his relatives, he loses the right of succession, which then falls to the second son. If the eldest son is married, and his wife and he live under the paternal roof, he does not lose the succession; but if the other sons—being sons of the wife—marry and leave the paternal roof they are not deprived of their share.

Arts and manufactures are less advanced amongst the Timorese than might have been expected. Such samples of their artwork as I obtained or saw were confined to the patterns on their cloths, to the decorations on their *kris* handles, and to the really

beautiful cigarette cases and boxes made out of palm-leaf fibres, dyed in very brilliant colours—yellow, red, and black—which they weave into beautiful patterns. The dyes they make themselves: the red out of the root of the *Morinda citrifolia*, the yellow out of the epidermis of a species of epiphytic orchid, which I failed to obtain specimens of, and the black, I believe, out of the indigo plant, but I am not certain. Their cotton is grown, entirely prepared and spun by themselves into the durable, and often beautiful cloths, which fetch large sums and form such a large article of trade among themselves as well as with the surrounding islands. I have already noticed the buffalo-hide ammunition pouches. In the interior, in the kingdom of Turskain, are workers in iron, chiefly sword and knife makers (and Peron has recorded that they employ the same double-cylindrical bamboo bellows as is used in Sumatra, Madagascar, Borneo, and Dorey in New Guinea), as well as men skilled in the casting of brass, especially for bridle-bits and stirrups. These are first modelled accurately in wax, and the mould then lined with fine clay, into which is poured the molten brass. In the Rajahship of Bibicuçu there are workers in silver, obtained from coins, and in gold, from their own rivers, who make rings, armlets, and *luas* (circular disks of gold, the insignia of those who have in war brought back a head of the enemy), and the utensils of the *lulik* house.

They are acquainted with the art of distilling the fermented palm-wine into a spirit of considerable strength.

Death rites.—When a member of a family dies, every relative is bound to give a gift of greater or less magnitude to the deceased, either in person or by proxy. Until absolutely every individual relative have done this the burial cannot take place. Each relative, on arriving where the dead person is, places his gifts on or near the body, and fires off as many shots as he can afford: the more he can fire off the greater is the respect, it is supposed, he has for the dead. When all the relatives have given their gifts, which are carefully preserved until the time of burial, the funeral—if the defunct be a lowly person, or possess few relatives and therefore requiring to afford but a small burial feast, without which no body can be buried—may take place without much delay. If, however, the deceased is of some rank, or has many relatives and friends, necessitating a costly death-feast, the funeral may be delayed for months or years, or even a century—till such time, in fact, as the relatives and descendants are able to pay for a burial feast. The corpse is then placed on a bier in a little hut prepared for it, near the dwelling of the relatives; or, as in some districts, it is folded at the hips and bundled in a mat and suspended by a cord below

the floor of the curious little dovecot-like huts which I have mentioned as built on the tops of trees for the storing of their valuables. If a son dies before his father is buried, the primary and imperative duty of burying his relatives descends to his heir with his other obligations. The knowledge of "who is who" among the various dangling remnants of humanity comes to each succeeding generation by demonstration and instruction from him under the obligation to his heir or near relatives. When at last the relatives have amassed sufficient buffaloes, pigs, goats, Indian corn, rice, *kanipa*, to provide a feast in accordance with the rank of the deceased, the body, in such condition as it happens to be, is laid out, attired and ornamented in its best garments and finery, placed in a short wooden coffin, of two dug-out blocks of wood, one resting on the other, wrapped in a cere cloth, or *patōla*, of red, yellow, and white colours mingled, and covered over with the various gifts which the relatives had bestowed on it, and the whole committed to the grave together, amid the firing of guns and the wailing of women. From the time the funeral company arrives, which is generally many days before that actually appointed for the interment, buffaloes and horses, sheep and pigs are ruthlessly butchered to satisfy the insatiable appetites of these savages, who devour it half-cooked, and whose drink throughout the whole period of the ceremonies is confined to the strongest and coarsest arrack. Under the influence of this stimulant the women, starting up, and falling into a ring, each beating a round drum, commence to dance, going round and round in a circle, at first slowly, then by degrees faster and faster, till they become thoroughly excited. Shouting and bawling out unintelligible words or sentences, they constantly increase the pace of their prance and the din of their voices, till the men at last become excited also, and, dressing themselves in their war feathers and accoutrements, and brandishing their swords, join in the drunken and demoniacal scene, which continues to increase in fury till the wearied-out frames of the performers sink through utter exhaustion, which often requires, so mad is their frenzy, a whole circuit of the sun to produce. In such a scene the Timorese exhibits himself as a true savage. When these orgies at last come to an end, the skulls and cheek-bones of the slain animals are strewn over the grave, on which stones have at the time of burial been heaped; or, in the case of persons of rank and importance, they are inserted into a tall pole, perforated with a series of holes, one above the other, to mark the eminence of him who sleeps below. Over the grave of a chief sometimes as many as 200 buffaloes are sacrificed, with smaller flocks and herds in proportion.

When a king dies, the chief officers of the household are

called together in order to declare the king is dead. Until this declaration is made the whole family preserves complete silence, but on its proclamation they break out into cries and lamentations. For seven days no work is permitted to be done, neither may betel or siri be chewed, and all the people cut their hair. The body is then placed in a large coffin, and guarded by the officials of the kingdom. For many days the relatives of the king continue to arrive, and each has to view the body, which is often decomposed, and emitting a stench which the Timorese seem not to perceive. During the period that the relatives of the deceased are being waited for, a great banquet is kept up to all who are present, of buffaloes, pigs, and horses, which the family of the defunct is bound to afford, and which often reduces them to absolute poverty. After this the family quits the house, in which the corpse remains until the day of the burial, which cannot take place until the relatives can afford it. Till such time the king is supposed to be asleep, and no successor with reigning powers takes his place. Like the Australians, the Timorese do not see why any one should ever die unless he is killed; so they attribute both sickness and death to the evil influence of a spirit or *swangi*, resident in some person or other, which their fanaticism easily settles on, which is believed to eat the spirit of the possessed person after death. When, therefore, the sick man died, the supposed *swangi*, with his whole family, was, till lately, seized, bound hand and foot, and either impaled or buried alive, and their goods confiscated for the profit of the accusers and the lord of the soil.

Agriculture.—The Timorese are far behind in the agricultural pursuits. Indian corn is their most largely cultivated and consumed product, and requires little or no care in any of its stages. It is grown on some of the very steepest slopes in the island—in some places where it even requires a very cool head to climb up. A simple pointed stake, for making holes to receive the corns, is the only implement used. Rice is cultivated both in wet ground and on the dry slopes, but they have no implement of husbandry beyond a rude hoe, called *haissuaké*, with which they scrape in a careless manner the ground after it has been cleared of weeds by fire. These dry fields are cultivated by the family cluster to which they belong. The wet grounds give more trouble. The making of the irrigation channels is done by the people of the whole *Suku* jointly; then each family attends to its own plot. After the water has been allowed to flow over it for some days, a herd of buffaloes is driven in and guided over and over it, to trample it down into a mass of liquid mud. During the doing of this the buffalo drivers constantly chant a song, but whether it is for their individual pleasure or to invoke a good harvest I was

unable to discover. When the crop is ripe the harvest field is an interesting sight. Every one, old men, women, and children, comes out to help. The older people in the centre of a long line, with the youths on the one hand and the maidens on the other, advance from the margin of the field stripping off with their hands the grains of corn into little baskets of which each carries one. The older men strike up a song, to which the youths and maidens sing a chorus, while sometimes the youths sing, and are replied to by the maidens, in more or less amorous strains. Behind this line two carriers bear an immense basket for the reception of the contents of the smaller ones in the hands of the reapers, who call out when these are full. When the crop is all gathered a great feast—called *Sallalah*—is given, at which immense quantities of the new and sweet rice are consumed, along with pig or goat flesh and abundance of *kanipa* followed by music and dancing throughout the entire night.

Before the seed is planted or sowed, some animal, generally a fowl, is killed and offered both in the *Uma-lulik* and in the *lulik* compartment of the owner's house, where at the same time a rich head of Indian corn and of rice is suspended and left till after the harvest, in their month *Potan*, when one of the greatest *lulik* feasts of the year takes place. On this occasion a buffalo is, I believe, sacrificed by the *Dato-lulik* in the great *lulik* house of the *Suku*, as a sort of thanksgiving for the gathering of the crop. When no rain has fallen, or if the season has been too wet, or when disease or any calamity befalls their crops or herds, a sacrifice is invariably made in the *lulik* house.

Tobacco and cotton are cultivated by them. Coffee is cultivated in considerable quantity, and being of specially fine flavour fetches a large sum at the coast. In the higher regions European potatoes, of a poor quality, are grown, but mostly for export. The cultivation of wheat has greatly declined, only a very little being now grown; there is no market for it, and it is difficult to grind, and there are no mills. The country could, however, produce abundance of it.

Law and Justice.—The law of the different kingdoms is a *lex non scripta*, and has been handed down from generation to generation. The *leorei* is judge as well as king, but acts only, however, on the rare occasions when a case is brought before him on complaint: his judgment is for the litigants always a costly boon. Every man or his family exacts justice on the person or his family wronging him by his own individual arm. If the wrong-doer has goods or chattels on which a fine may be levied, the wronged, as a rule, exacts a fine in expiation. Homicide is revenged by death, but this penalty can be averted by the payment of the equivalent in money or goods demanded by the

relatives, and the substitution of some one of the offender's family to take the place of the slain. A robber taken in the act was executed on the spot—and is even now when the avenger is likely to escape punishment by the European authorities, who have rightly interfered with the interior arrangements of the rajahships and forbidden certain of their old and flagrantly unjust customs—and if the theft consisted of a living animal the head of the animal was struck off and affixed near that of the robber's, on a stake. I was fortunate enough to see one of these terrible mementoes during my journey in the kingdom of Laclubar. In numerous districts warnings, conspicuously exhibited on prominent heights, are set up indicating the fate of robbers and thieves. Such a memento is called a *Kero*, and consists of a tall bamboo surmounted by a transfixed human figure at the apex of a triangular structure, whose remaining angles support representations of human heads. On stakes below these ghastly insignia, were various kinds of fruits, cocoa-nuts, pinangs, rice, &c., to indicate that the penalty would be exacted for theft of any such articles. Every crime, however small, could be avenged by death, but all, if the offender were sufficiently rich, could be expiated by a fine, except two: adultery with any of the rajah's family, and the being a *swangi*, that is, being a sorcerer, for which the punishment—or perhaps it ought to be called *cure*—was impalement with all his family, and confiscation of all their goods for the benefit of the accuser and the lord of the soil. Compare with this the state of the English people in early times. "They possessed," says Dr. Green, "the right which, in such a state of society, formed the main check upon lawless outrage, the right of private war. Justice had to spring from each man's personal action, and every freeman was his own avenger. The blood-wite, or compensation in money for personal wrong, was the first effort of the tribe as a whole to regulate private revenge."

As the taking of life is strictly forbidden by the Portuguese, and punished with the utmost severity when proof can be obtained, causes before the rajah are becoming more frequent, in order to obtain the fines which the wronged claims from the wrong-doer for his offence, which in former times, if not paid, would have been atoned for by his head.

During our stay in the interior the rajahs were ordered to see us supplied with all necessaries; certain families were, therefore, detailed for each day's supply. On one occasion no food was forthcoming, and as the rajah had gone away, I was under the necessity of taking the law into my own hands. I shot the nearest pig I encountered. It was the rajah's, but it brought us through this simple act face to face with a very primitive state of

society, much like what once existed in our own country. A wrong done against the rajah by one individual of the kingdom had to be expiated by a fine against all the *Sukus* of the kingdom. Through the fault of one member this loss came on the rajah, and all had to pay. "The price of life or limb," to quote from Green's most interesting "History of the English People," pp. 2, 3, "was paid, not by the wrong-doer to the man he wronged, but by the family or house of the wrong-doer to the family or house of the wronged. Order and law were thus made to rest in each little group of English people upon the blood-bond which knit its families together; every outrage was held to have been done by all who were linked by blood to the doer of it; every crime to have been done against all who were linked by blood to the sufferers from it. From this sense of the value of the family bond as a means of restraining the wrong-doer by forces which the tribe as a whole did not yet possess, sprang the first rude forms of English justice. Each kinsman was his kinsman's keeper, bound to protect him from wrong, to hinder him from wrongdoing, and to suffer with and pay for him if wrong were done."

The episode is one which well illustrates how near a traveller, seeking for information of an abstract kind, may be to missing some of the most characteristic and interesting of their manners and customs, and how only by a lucky chance or mischance in the most unexpected way he lights on some fundamental fact in their history.

Inasmuch as each man has the right of private war, the customs which attend the making of public war may perhaps be well discussed under this heading. When a raid by one tribe has taken place on the fields or herds of a tribe in a neighbouring kingdom, a messenger is sent with the intelligence to its rajah. If the rulers of the two kingdoms are united by the ordinary ties of friendship, or by the sanctity of the blood-bond, the affair is settled, after long parleys and discussions, by the payment of an agreed-on price. If no goodwill exists between the two, no satisfaction will be obtained, and war is prepared for. Both sides select, by the sacred rites described above, when describing the *Uma-lulik*, the men who are to sustain their cause in the field. At length, when the armies meet, a last discussion of the question is held by a representative of each side, who advances in front of the respective armies. If no agreement is come to, the fight begins. It is carried on mostly by the offensive army pillaging and ravaging all they can lay hands on, robbing every undefended dwelling, ruthlessly decapitating helpless men, women, and children, and even infants. Being really of a very cowardly spirit, they never fight in the open, but from behind trees and crags. When one of their

number has fallen, sorely wounded or killed, there is, in general, a grand stampede of all his companions. The valiant marksman rushes forward, and, standing over his fallen foe, calls out to his friends, "Ho! what is the name of this man?" His friends call back, "Ho! that is so and so;" to which the response is, "Know, then, that I am so and so," and, lifting up his enemy's head by the ear or the hair, he decapitates him at one blow. He carries off the head in triumph, retires to his own house, and sets about preparing and preserving the head, by removing the brain and drying the flesh and skin before a slow fire. He never washes his hands till he returns with the army to its own capital, when those who come back carrying heads are saluted by the women, who along with the *Dato-lulik* have come out to meet them with music, with the cry of *Oswai! oswai!* ("Braves! braves!") For every head the fortunate warrior brings back he receives a present from the rajah, and a circular disk, or *lua* of gold, which he henceforth continually wears—a Timorese Victoria Cross. These heads are carefully preserved by both sides in the conflict, till such time as amicable relations can be established between them, when a general assembly of the two kingdoms takes place, to which the heads taken in the war are brought also. Amid terrible howlings and lamentations they are restored by each side to the relatives of the deceased. Each "Brave," in giving up the head, gives a small gift to the relative, and friendship between them is again restored, and cemented by, as usual, a boisterous feast, concluded by heavy drinking, and the wild dancing of the *Tabélu*, described under the head of *Death Rites*. The recovered heads are now placed with the unburied members, which can then obtain sepulture. Every head is invariably forthcoming at such a peace-making, otherwise amicable relations could scarcely be restored, certainly not without a very heavy price for the missing head. It is quite a mistake, so far as East Timor is concerned, to say that they steal heads like the wild tribes of Borneo (Wallace, "Australasia," p. 430). In war only are they ever taken. No possible rancour or disgust seems to be entertained between those whose relatives have lost their heads, and those who have taken them. Riding one day in the interior, we encountered three men standing by the way to see us go past. After we had gone a little distance my servant, the son of one of the chiefs of the kingdom which I was nearing, said, "Do you see the tallest of those three men?" I replied in the affirmative. "He is an *oswai* (said with some degree of admiration); he cut off my father's head!" He showed no emotion on the subject, nor did he use any opprobrious remarks about the man, nor exhibit any disgust or loathing towards him. "Did he not bear him any ill-will?" I asked. "Oh, no," he

replied; "the two kingdoms are now at peace, and have given back the heads they took."

In most districts all the warriors fight on foot; but the Lamkitos who live between Allas and the great mountain of Kabalaki, fight from horseback, with their legs tied under their horses' bellies, so that in case of their being wounded or killed their horses may carry them back to their own village and save their heads.

In war, a kingdom, related to another by ties of marriage or sworn brotherhood, sends men to assist in its wars; or, a kingdom may hire men from a neighbouring or friendly power. If any of these are killed they must be redeemed by a large sum. So much must be paid for the eyes, hair, mouth, nose, every limb and organ of the body. This custom of reckoning the value of a man I met with in the island of Buru also. To quote again from our own old records (see Green's "History of the English People"), "The freeman's life and the freeman's limb had each on this [blood-wite] system its legal price. 'Eye for an eye,' ran the rough code, and 'life for life,' or for each fair damages." Travelling in the interior I was in each kingdom taken over by an officer belonging to it, who assumed all responsibility for my safety and baggage. It was amusing to hear the charge delivered and received, "Has the Inglez two eyes, a nose, hair, a mouth, two arms, &c.?" On being answered in the affirmative, the relieving guard made the rounds to see if all were really so, before taking over the responsibility. Had I come by any accident, or any of my baggage had gone a-missing, the kingdom would have had to replace it or pay the penalty. In this way I was relieved of all care or anxiety for everything, and did not lose a single cent's worth in my forty days' journey.

Superstitious rites and customs.—When earthquakes occur, the Timorese scream out and bewail that Maromak has forgotten them, and allowed the world to fall off the straight.

One day, while riding by a very steep and dangerous bridle path over a mountain, we came on a little mound, which they called *Matu*, in the fair way, round both sides of which the path passed. Each of the natives with me gathered some leaves or a twig from a tree, and laid it on the mound, "to insure a safe descent." On the trees near by were hung up various articles—cigarettes, *coils*, little cigarette cases, and leaves in which rice had been carried, and stumps of Indian corn heads. Almost the same custom was met with in Sumatra, where a large block of stone on the side of a thick forest path was offered something by every passer-by. "A parallel," to quote from Waitz's "Anthropology," p. 321, "exists at this day in Dauphine, where every passer-by throws into a certain chasm a little stone as an offering

to the mountain spirit;" and I believe the custom is not unknown in our own country.

The Timorese consider it an indignity for a man to ride on a mare, and for a woman on a horse. Compare with this Lady Strangford's remark, in her "Egyptian Sculpture," p. 247, "It is the highest indignity for a mare to be mounted by a woman."

The shade of all dark, far-spreading trees, especially of the figs, is considered *lulik*; offerings are made under them of rice and flesh, and the heads of their sacrificed goats and buffaloes are deposited under it. Before going away on a long journey they almost invariably visit such a spot in the vicinity of their own homes, and make a small offering. The summits of the highest mountains, and of rugged and singularly formed peaks, are all *lulik*, and no man would dare to break a branch of a tree growing on them, and only after due ceremony would he ascend them. Other spots associated with various traditions are also sacred; and in every such tabooed place offerings are made, and one gets such a reply to his inquiring "Why there?" as "Oh, our forefathers had there their buffalo enclosures and gardens."

The ceremony of blood-brotherhood, or the swearing of eternal friendship, is of an interesting nature, and is celebrated often by fearful orgies, especially when friendship is being made between families, or tribes, or kingdoms. The ceremony is the same in substance whether between two individuals or large companies. The contracting parties slash their arms, and collect the blood into a bamboo, into which *kanipa* (coarse gin) or *laru* (palm-wine) is poured. Having provided themselves with a small fig-tree (*halik*) they adjourn to some retired spot, taking with them the sword and spear from the *lulik* chamber of the house if between private individuals, or from the *Uma-lulik* if between large companies. Having planted the tree they flank it by the sacred sword and spear, and hang on it a bamboo receptacle. After pledging each other in many libations of gin, each party drinks of the mixed blood and gin, leaving a small quantity, which is poured into the bamboo suspended on the tree. Then each swears, "If I be false, and be not a true friend, may my blood issue from my mouth, ears, nose, as it does from this bamboo," on which the bottom of the receptacle is pricked to allow the blood and gin to escape. The tree remains and grows as a witness of the contract. It is one of their most sacred oaths, and never I believe violated, at least between individuals. If a member of a family of a king marries into that of another, the two kingdoms swear friendship, and when the one is at war the other is bound to send to aid him. It sometimes happens that the family of one rajah has married into the families of two other rajahs, and if these are at war together, he is in the difficult

position of having to send aid to both. One blood-brother coming to another's house is in every respect regarded as free, and as much at home as its owner. Nothing is withheld from him; even his friend's wife is not denied him, and a child born of such an union would be recognised by the husband as his. In speaking of the Greenland Esquimaux, Egede expressly states that they were reputed the best and noblest-tempered who, without any pain or reluctance, would lend their friends their wives.

The form of oath among the Timorese is very simple—"Maromak knows."

Disease among them is believed to be the result of sorcery; and they carry in their *coi* herbs and other remedies and charms, to drive away the *swangi*. I had as a servant an old man, who one morning complained of being in a very discomposed and generally uncomfortable state, and of being afraid he was going to die. He had seen, he said, the spirit of his *mai* (mother) in the night, and she had been present by him and had spoken with him. He feared, therefore, that he was about to die. He begged of me some tobacco and rice to offer to her, which I gave him. He retired a little way to a great stone in the ground, and laying on it some betel and pinang, with a small quantity of chalk, along with a little tobacco and rice, he repeated for some eight or ten minutes an invocation which I did not understand. The rice and the chalk he left on the stone, which were very shortly after devoured by my fowls; the tobacco, betel and pinang he took away again, to be utilised by himself.

The Timorese are such clever thieves that the greatest robbers are reputed to be possessed of a *swangi*, that is, really to be sorcerers, and they are thus able to approach in the night, for the purpose of carrying off horses, &c., in an invisible state, by simply holding betel and pinang in their hands.

The office of medicine man is held by the *Dato-lulik*. When called to see some very sick person, he attentively contemplates him, till he is able to perceive the sorcerer or *swangi* that is making him ill. Returning to his house he compounds various herbs and medicines, which binding up together in a bundle, with a small stone, he throws as far from him as possible. The pebble is supposed to find out the *swangi*, and return to the *Dato-lulik* with a portion of the entrails of the *swangi* about it. This he gives to the sick man, who will recover, and will suffer no more harm from his bewitcher, if he wear it only round his neck.

During the height of the dry season, when the rivers have almost disappeared, one of their greatest ceremonials is held to inaugurate their search for gold, which in many parts of the island

exists in considerable quantity in the river *débris*. Before deciding on a day to commence the gold-washing, some of the children—in order that no suspicion may be awakened among, I imagine, the river spirits that the search is intended—are sent to report whether the river is sufficiently low, and in a favourable condition. On their return the people are assembled, and public proclamation made—"Oh! Ho! Ho! four days hence we go to gather gold." On that day the *Dato-lulik*, dressed in all the vestments of his office, proceeds (in the kingdom of Bibiçuçu) to the top of the curious Peak of Fatunaroek, where a flat stone exists, which is supposed to be the most sacred altar in the kingdom. Behind him follow all the people—men, women and children. The older men seat themselves on the ground nearer to the *Dato*; the women, children, and younger men keeping at a respectful distance. The *Dato-lulik* then in front of the great stone addresses the spirits of the dead, then the Maromak of the heavens, and Him of the earth. All then return to their homes, where each kills a fowl or a small pig, and offers to the *lulik* of his own house, acting as his own "house-priest," and proceeds to the river—whose sources are rigidly *lulik*: no one dare enter without sacrifice the surrounding country; neither cattle nor horses will eat, they believe, the grass there—to wash the sand over the *Vatu-lulik* of his house. This is the flat stone on which he offers part of the animals sacrificed in his own house to the divinity. They affirm that all get some gold, more or less, on that day—but all some. The ritual to be followed by one who is to search for the first time differs somewhat from that observed by those who have searched before. On his return from the mountain he must enter the *Uma-lulik*, taking with him a fowl or a young pig, which, after the celebrant has made what appears to be a sort of confession to the *Dato-lulik*, is killed, when a part of the heart, and flesh from the jaws of the animal, are offered to the *lulik*, and some of the rest partaken of by both of them. The novitiate gold-washer, after receiving some sacred siri and pinang, accompanies the *Dato* to the river, where, after another fowl or pig has been killed, he may collect sand anywhere at random, and "of a surety he will find gold in it." "Maromak alone gives the gold."

Divisions of the year.—In Saluki, in the kingdom of Bibiçuçu, I obtained a list of the months into which they divide their year; and in the kingdom of Samoro also. I give them as I recorded them, but it will be seen that the names by which they are known are not exactly the same in both districts.

There are thus twelve months, which they reckon by moons, in their year. How many days there are in a moon they did not seem to know, for they were variously stated from 16 to 35.

(Salukî) Bibicuça.		Samoro.	
<i>Fusa</i> ..	In this month (corresponding to about our October) they plant the <i>vater</i> , or Indian corn, and sow the dry ground rice.	<i>Leët ali</i> ..	Same operations.
<i>Fahi</i> ..	Clean grass out from among the <i>vater</i> and rice.	<i>Fahi</i> ..	Same operations.
<i>Naru</i> ..	"Great month." Indian corn is in flower. Heavy rains and all rivers flooded.	<i>Naru</i> ..	Same operations.
<i>Potan</i> ..	The name of the month probably a corruption of the Malay <i>Potong</i> , the cutting or harvest month. In it they gather in the ripe Indian corn, and give a great offering to the <i>lulik</i> , a sort of Harvest Thanksgiving, the Indian corn being their staple food.	<i>Tora</i> ..	Same operations.
<i>Madank</i> ..	Harvest dry rice fields ..	<i>Madank</i> ..	Same operations.
<i>Wani</i> ..	Honey and wax harvest ..	<i>Wani</i> ..	Same operations.
<i>Uhi</i> ..	Probably a corruption of <i>Ubi</i> , or sweet potato, which crop in this month is dug up and harvested.	<i>Uhi bôot</i> ..	Same operations.
<i>Madai bôot</i> ..	Month of fogs and heavy rains from the sea.	<i>Uhi kiik</i> ..	Same operations.
<i>Madai kiik</i> ..	Less rain; little possible to be done these two months.	<i>Lakubutik</i> ..	Same operations.
<i>Lakubutik bôot</i>	Still showery	<i>Madai</i> ..	Same operations.
<i>Lakubutik kiik</i>	Very hot. In this month, after great offering to <i>lulik</i> , search is made for gold, and continued only during this month.	<i>Fusa</i> ..	Same operations.
<i>Lêet</i> ..	Hot month. Grass is burned, and preparations made for planting the Indian corn.	<i>Lêet Manuluk</i>	Same operations.

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Description of Plates XXVI and XXVII.

PLATE XXVI.

- Fig. 1. Profile of native of the kingdom of Bibiquçu, Timor (Polynesian type?).
 " 2. Ditto (Malayan type).
 " 3. Full-faced portrait of a native of Saluki, Timor (Papuan type).
 " 4. Ditto (Malayan type?).

PLATE XXVII.

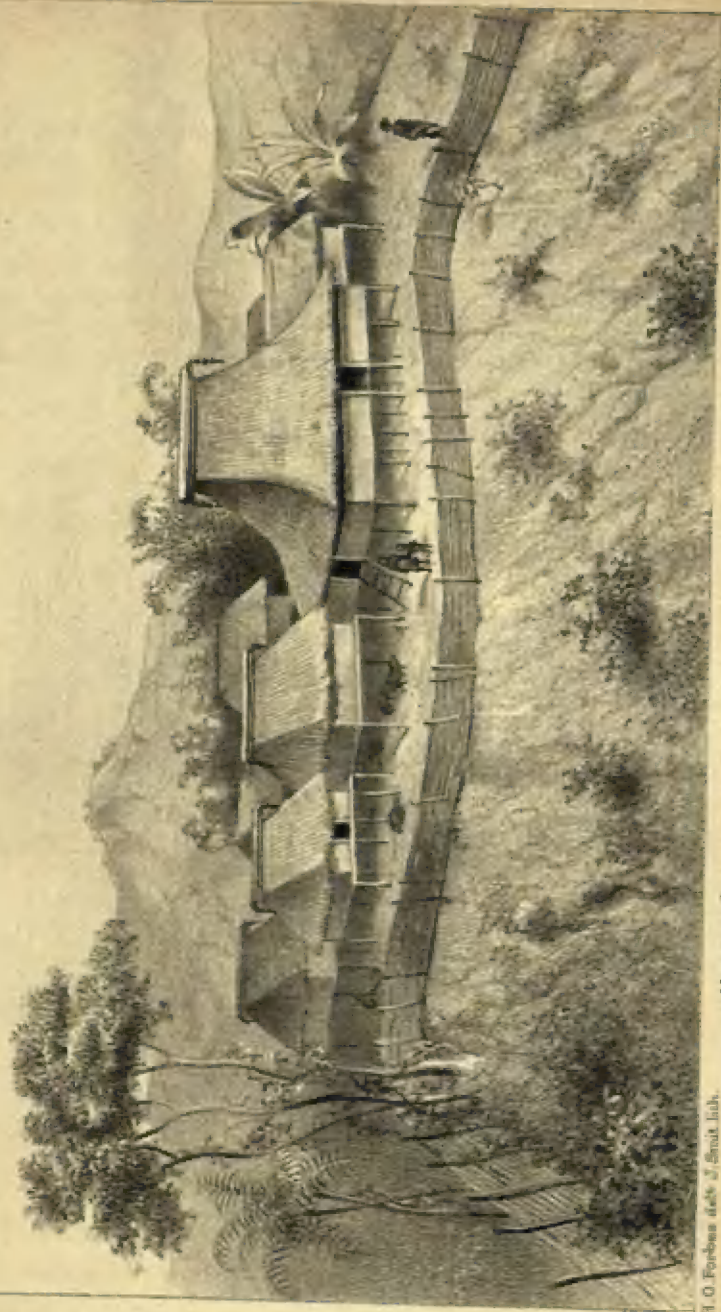
Timor house-cluster, in the Kingdom of Bibiquçu.

DECEMBER 11TH, 1883.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair*

The Minutes of the last meeting were read and confirmed.

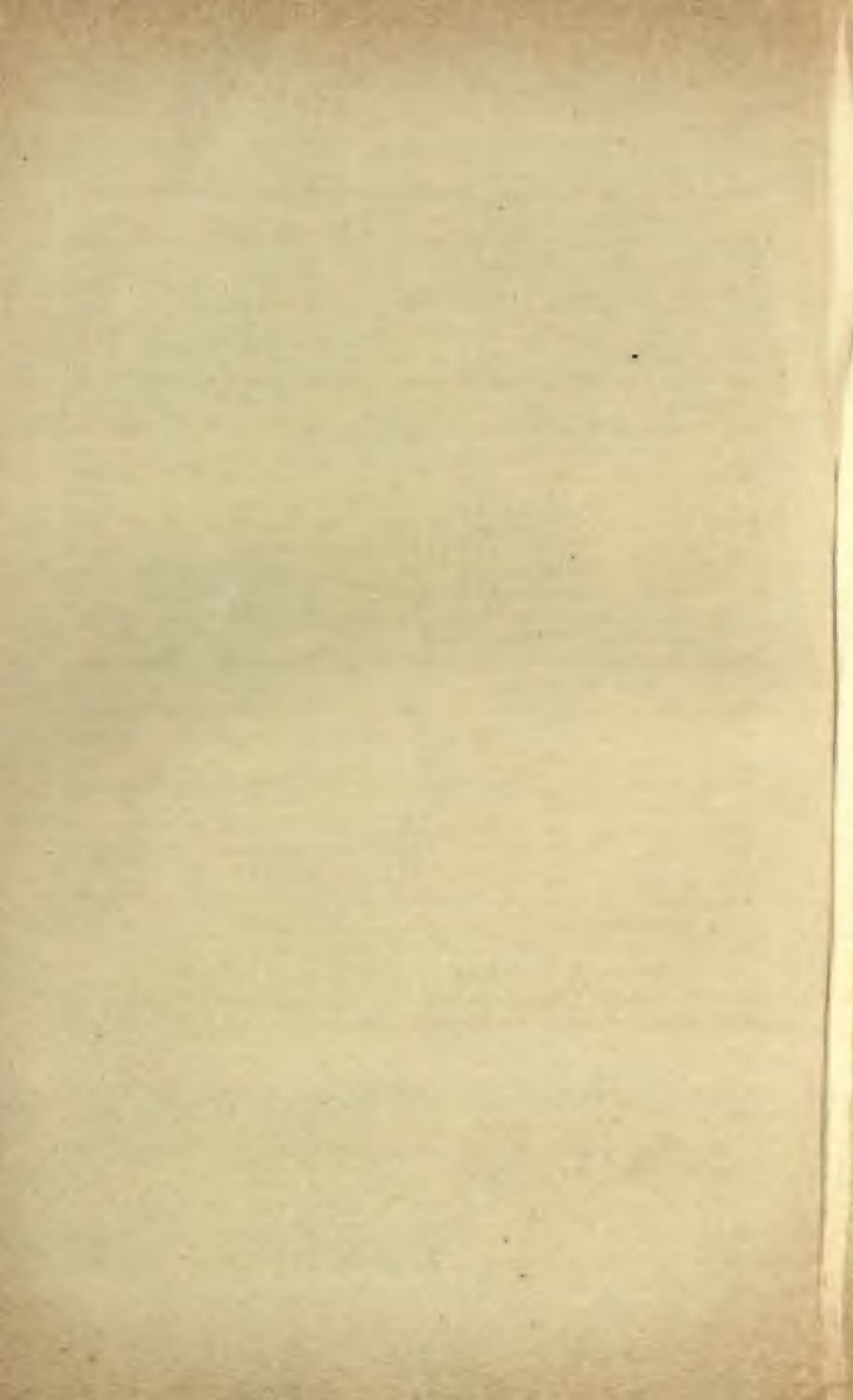
The following presents were announced, and thanks voted to the respective donors:—



H. O. Forbes del. J. Brink lith.

HOUSE CLUSTER IN THE KINGDOM OF BIBIÇUCU, TIMOR.

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FOR THE LIBRARY.

- From A. L. LEWIS, Esq.—*Renseignements sur la Population de Finlande.* By C. E. F. Ignatius.
- From the AUTHOR.—*On the Proper Names of the Panjabis.* By Captain R. C. Temple.
- *'Aei, aiéu* und das ampliativ-suffix *av*, lat. *ôn*, sowie Wörter auf -go, -do im nominativ. By Prof. A. F. Pott.
- *Note sur la Pelvisternum des Édentés.* By Prof. Paul Albrecht.
- *The Law of Human Increase.* By Dr. Nathan Allen, M.D., LL.D.
- *Changes in the New England Population.* By Dr. Nathan Allen, M.D., LL.D.
- From the GEOGRAPHICAL SOCIETY OF SAN FRANCISCO. *The Journey of Moncaht-Apé.* By A. McFarland Davis.
- From the STATE BOARD OF HEALTH, BOSTON, MASS.—*Forty-first Report to the Legislature of Massachusetts, relating to the Registry and Return of Births, Marriages, and Deaths in the Commonwealth for the year 1882.*
- *Fourth Annual Report of the State Board of Health, Lunacy, and Charity of Massachusetts.* 1883.
- From the ASSOCIATION.—*Journal of the East India Association.* Vol. XV, Nos. 6, 7.
- From the LIBRARY COMMITTEE.—*Thirty-first Annual Report to the Council of the City of Manchester, on the Working of the Public Free Libraries.*
- From the SOCIETY.—*Proceedings of the Royal Geographical Society.* December, 1883.
- *Journal of the Royal Asiatic Society.* Vol. XV, Part 4.
- *Journal of the Royal Asiatic Society of Bengal.* No. 254.
- *Journal of the Society of Arts.* Nos. 1618-1620.
- From the EDITOR.—*Revue Scientifique.* Tom. XXXII, Nos. 21-23.
- *Revue Politique.* Tom. XXXII, Nos. 21-23.
- *Revue d'Ethnographie.* Tom. II, No. 5.
- "Science." Nos. 41, 42.
- "Nature." Nos. 734-736.
- *Panjab Notes and Queries.* No. 2.

The election of E. W. STREETER, Esq., F.R.G.S., F.Z.S., was announced.

Mr. WALTON HAYDON exhibited a collection of photographs of North American Indians.

Dr. R. G. LATHAM, M.A., read a paper "On the use of the terms Celt and German," which evoked a discussion in which the PRESIDENT, Professor KEANE, Dr. E. B. TYLOR, and Mr. A. L. LEWIS took part.

Dr. E. B. Tylor then read the following paper :—

On some AUSTRALIAN CEREMONIES of INITIATION.

By A. W. HOWITT, Esq., F.G.S.

TRAVELLERS, missionaries, and residents in the Australian bush have long known and reported the existence of certain aboriginal ceremonies, which attend the "making of young men," as the practice has come to be called. One of the very earliest works on Australia, namely, that of Collins,¹ describes and gives illustrations of parts of the ceremonies as practised at Port Jackson. Fragmentary accounts are to be found in other works and in the newspapers and magazines published since that time; but, so far as I am aware, no attempt has yet been made to give a detailed account of the ceremonies of any one tribe, nor, much more, to attempt an explanation of the meaning and intention of the ceremonies themselves. This, no doubt, arises from the difficulties in the way of obtaining correct and precise information. The aborigines are very reticent on the subject; moreover, of the very few white men who have become initiated, few have been competent to record the necessary particulars, even if they had thought of doing so, and at least one has been as reticent on the subject as the aborigines themselves.² The accounts which have been made public appear to have been at second-hand, derived from the statements of blackboys living with the whites, or from persons who had been permitted to witness the more public parts of the ceremonies.

Speaking generally, it may be asserted with safety that initiation ceremonies of some kind or other, and all having a certain fundamental identity, are practised by the aboriginal tribes over the whole of the Australian Continent.

In this paper I propose to record only so much of the information in my possession as will enable me to give a clear and connected account of the initiation ceremonies which are common to a very large aggregate of tribes in the south-eastern part of Australia. I shall therefore leave till a future time the more complete details, and also the discussion and orderly arrangement of the scattered accounts which have been given by others.

¹ "An Account of the English Colony in New South Wales" (London, 1798).

² Those who were initiated in the early days were mostly escaped convicts who joined some tribe; others were wandering bushmen or shipwrecked sailors. It is remarkable that Buckley makes no mention of these ceremonies in his "Life." It is scarcely likely that during the thirty-two years he lived with the Port Philip aborigines he was not present at several of their gatherings. It is most likely, in my opinion, that he refrained from describing that which during so many years he must have been told it was not lawful to disclose to the uninitiated.

My account will be drawn partly from that which I have witnessed and taken part in as an initiated person, and partly from conversation which I have held with blacks as to the ceremonies of their own tribes. On these statements I can rely, not only by being in a position, from my own knowledge, to form an opinion as to their truthfulness, but also because between the initiated there is, as I have found, no reservation, but a feeling of confidence—I might even add almost of brotherhood. For the sake of comparison I draw a few illustrations from the statements of my correspondents.

The tribes to which I refer are the Wolgal, the Ngarego, the Theddora, and the Coast Murring. In a former paper on "Some Australian Beliefs"¹ I have spoken of these, and have mentioned their localities. To these I now add the Wiraijuri. This tribe occupies a large extent of country along the course of the Murrumbidgee River, as far, at least, as Hay.² It lies to the northward of the Wolgal, and of certain tribes of North-Eastern Victoria, as to which I, at present, know little, except that they belonged to that "nation" (if I may use the term) which applied the word "Kulin" to its own men. To the east of the Wiraijuri are the Kamilaroi; to the north, among other tribes, the Wonghibon (having the Kamilaroi organisation); and to the north-west and west, the great tribe of the Barkinghi, which occupied almost the whole of the the extreme west of New South Wales. To the south-west there are a number of small tribes about the junction of the Murray and Murrumbidgee Rivers.³

The five tribes which I have named as the subjects of this paper occupy, therefore, a very large extent of southern New South Wales, from Twofold Bay to Sydney, and (including the Lachlan River) as far west at least as Hay. These five tribes, or perhaps tribal groups, represent a social aggregate, namely, a community bound together, in spite of diversity of class system, by ceremonies of initiation, which, although they vary slightly in different localities, are yet substantially the same, and are common to all. Again, each of these five tribes, if regarded separately, is found to be not only connected in the way I have mentioned with the other four, but also with other neighbouring tribes in a similar manner, so that "the community," as indicated by the initiation ceremonies, spreads over even a wider extent of country than that which these five tribes occupy.⁴ For instance,

¹ "Journ. Anthropol. Inst.," vol. xiii, No. 2.

² From *wirai*—No. The tribe has three large local divisions at least, and these local names have been perpetuated by the whites as names of places; for instance, *Narrandra*—Prickly Lizard; *Cootamundra*, from *Kātāmā*—Turtle; *Murrumbidgee*, from *Muring-bidgee*—Two bark canoes.

³ Reported upon by Mr A. L. Cameron.

⁴ Yet the community of initiation-ceremonies and the practice of inter-

the Coast Murring, according to their own account, attended the initiations not only of the Ngarego, but also of the Kátungal (sea-coast people), and the Kúrial (northern people), as far as or even beyond Sydney. They intermarried with the Krauatün-Kúrnai about Mallagoota Inlet, and would have no doubt attended their ceremonies of initiation had these people had any. The Ngarego attended the ceremonies of the Theddora, of the Coast Murring, of the Wolgal, but their other neighbours, the Bidwelli, in the south-west, had no ceremonies of their own, any more than had their southern neighbours, the Krauatün, who did not even attend the *Jera-eil* of the Kúrnai tribe.¹ Very rarely individuals of the Krauatün or Bidwelli have been initiated by their neighbours. The Wolgal attended the ceremonies, not only of those tribes which I have mentioned together with them, but also of other tribes to the north-east, who are of the Kamilaroi stock. Similarly the Wiraijuri attend the ceremonies of all the tribes adjoining them, as the Barkinghi and Wonghibon. It is easy to see how very widespread were the bonds which bound together the native communities, and in what manner the privileged old men—for instance, the doctors and wizards of some distant tribes, as the Barkinghi—might, in attending the initiations of the Wiraijuri, become acquainted with the leading Wolgal men, and even under their safeguard visit the Ngarego ceremonies. These privileged men play an important part in the inter-communication of the tribes, and have often what I may even call an inherited influence

marriage did not prevent the tribes from making raids into each other's country in the olden time. The Coast Murring and the Ngarego were constantly and desperately at war, and the Wiraijuri even made raids to the very coast-line. The Coast Murring called them by a significant nickname, meaning "Come-by-night."

¹ The Kúrnai tribe was epigamic only with its neighbours along the coast on either side. Its extreme isolation prevented more than the slightest intercourse—by occasional raids along the "war-paths"—with the other surrounding tribes to the east, north, and west. Along the coast to the eastward, the Krauatün clan of the Kúrnai adjoined the Mallagoota branch of the Coast Murring, and intermarried with it. To the south-west, along the coast, the outlying branch of the Bratana clan of the Kúrnai met the western port Kúlin, between Wilson's Promontory and the Tarwin River. These people intermarried and attended each other's initiations. The Kúrnai were therefore, with these exceptions, a people quite apart from all others, and even now the Coast Murring speak of them with contempt as "a people who have no *kuringal* (initiation), and who know nothing." The Bidwelli tribe, which inhabited the jungle country lying between the Kúrnai, Coast Murring, and Ngarego tribes, had no initiation ceremonies whatever. It is, however, quite clear to me that it became organised as a tribe on the "old lines," so to say, by the association of "broken men" who have from time to time taken shelter from the pursuer or the avenger in the fastnesses of the inhospitable jungle, of the tract of mountain and swamp, that forms the eastern corner of Gippsland. The Bidwelli language is compounded of portions of those of the surrounding tribes, and its members had an equally composite set of class and totem names.

through marriages. Such a case is that of one Yibai-Málian,¹ who exercises great influence over the scattered remnants of the Coast Murring and Ngarego, as well as of the Wolgal, to which he belongs. His father, who was a renowned "blackfellow doctor" of the Wiraijuri tribe, joined the Wolgal, with whom he was related by marriage, and he then obtained a wife from the Theddora of Omeo. By this he again became connected, through her relations, with the Ngarego, and met the Coast Murring and acquired influence with them at their ceremonial meetings.

It is very difficult to say, at present, to what distance the peculiar form of ceremonies which I am about to describe extend. I may mark their least northern extension by a line drawn from Sydney, down the Lachlan River, to Balranald, if not still nearer to the Darling, and I think it extremely likely, from information I have, that the ceremonies, in modified forms, may be found to extend throughout the greater part of New South Wales, or even into the colonies of South Australia and Queensland. I am unable to define the limits south of the Murray River, because the process of tribal destruction has been so complete in many cases that as yet I have not been able to trace out what the ceremonies were in Northern and Western Victoria, beyond the bare fact that they had some resemblance to those I am about to describe. So rapid was the disorganisation, for instance, of the Woi-worung tribe of the Yarra River that its ceremonies do not appear to have survived in a complete form more than ten years after the founding of Melbourne.

Beyond the extreme northern and south-western limits which I have suggested for the ceremonies I shall describe—that is, in the central part of South Australia and the south-west of Queensland, I find reason to believe that there is a somewhat different type of initiation marked by a general practice of circumcision and a somewhat less general practice of slitting up the urethra, to a greater or less length. I do no more now than indicate this, as I desire in this paper to confine myself to those ceremonies with which I have a personal acquaintance.

The Assemblage for Initiation.—The community which assembles for the periodical initiation of its youths is, in principle, the united exogamous class-divisions which in a former paper I formulated generally as $A + B$. But this fundamental principle is obscured in practice. The men of A class initiate the youths of B class, and *vice versa*; but it is the men as a whole, representing the local organisation, who control and conduct the ceremonies.

Where the class-divisions are well marked and full of vigour,

A man of the Málian (Eaglehawk) totem of the Yibai (Ipa) sub-class of the Wiraijuri community.

with uterine descent, as in most tribes having the Kamilaroi organisation, it is the social organisation which takes the initiative in calling together the whole community. Where, however, the social organisation has become weakened, where the class-divisions have become more or less extinct, and where the line of descent has changed to that through the father, then it is that the local organisation takes the whole control into its own hands, calls the assembly, and conducts its proceedings. Yet even in such cases there are surviving traces of the older system, for it is invariably the case that it is the men of one exogamic class-name who initiate the youths of the other.¹ The local organisation, in fact, restrains the exercise of the marital rights inherited by an individual, until after that he has been formally admitted to the privileges, duties, and responsibilities of manhood. It is the assembled fully initiated men who do this, and these men are the local organisation.

I have already said that the community, as defined by the extent locally of the initiation ceremonies, is far wider than the extent of the tribe. It includes, in fact, all those tribes between which there is connubium. Wirajuri, Wolgal, Ngarego, Theddora, and Coast Murring are all completely distinct, so far as the local organisation of each is concerned. But they form one community. They are all more or less epigamic—those most distant from each other in very little degree. The ceremonies of initiation, although differently named in the diverse languages or dialects of these tribes, are essentially the same in all, and they bind the whole of the different communities into a still greater whole. The differences existing between the class-systems of these different parts of the community do not even interfere with their unity as a whole, or even with the intermarriage of people of apparently different class-systems. Nor is this the case even where the lines of descent differ. Making use of the convenient formula which I have before adopted, I may give this explanation. The social organisation of the Wirajuri is of the well-known Kamilaroi type.²

¹ That is, a youth is directly under the charge and instruction, during his initiation, of a man who is either the husband of his sister or who is the brother of the girl who has been promised to him as his future wife. If there is no "own" sister's husband, or any "betrothed," then a "tribal" sister's husband, or brother of a "tribal" wife, is selected.

² The following tabular form is provisionally given from as yet incomplected inquiries:—

Primary classes.	Sub-classes.	Totems (<i>Būdjan</i>).
Not known to exist	Yibai-Yipatha ..	Opussum, Eaglehawk, Malleebhen, Fly, Native Bee, &c.
	Wūmbi-Būtha ..	Lizard, Crow, Padimelon, &c.

That of the Wolgal is similar, but with somewhat different groups of totems. Ngarego and Theddora had class-divisions of the formula $A + B$, without sub-classes, with a large group of totems representing each primary class, and having uterine descent.¹ The Coast Murring have no class-divisions, and their totem names are anomalous, as well as in a decadent state. In some places each individual has two totem names, and in other places only one, and the totem name goes from father to child. There are therefore what seem at first sight irreconcilable differences in the class-divisions, totems, and line of descent of these tribes. Yet there is intermarriage between them, and the intermarriages are regulated by the equivalence of the class and totem names. This equivalence was known to the old people, and still forms the subject of earnest consultation when a marriage is under consideration.²

The term "community," in the sense in which I now use it, means the aggregate of all those tribes which meet at the same initiation ceremonies, or who having substantially the same ceremonies might meet if occasion were favourable, and between whom there is intermarriage, although perhaps rarely.

Primary classes.	Sub-classes.	Totems (<i>Būdjan</i>)
Not known to exist	Mūri-Matha	Red Kangaroo, Small Iguana, Young Emu, &c.
	Kūbi-Kūbitha	Hawk, Bush-rat, Flying Opossum, &c.

These are clearly variations of the well-known Kamilaroi sub-classes and totems.

Primary classes.	Totems (<i>Būdjan</i>).
Merūng (Eaglehawk)	Lyrebird, Bat, Flying Squirrel, Black Snake, Mopoke, Black Opossum, Red Wallaby, Fish.
Yūkembūk (Crow)	Small Hawk, Rabbit Rat, Kangaroo, Emu, Iguana, Native Companion, Porcupine, Sleeping Lizard.

These are evidently the equivalents of the Eaglehawk and Crow classes which extended over a large part of Victoria and over the greater part of the extreme west of New South Wales.

¹ With the Coast Murring the local groups are under a strict exogamic rule, so that a man cannot marry a woman of his own locality, nor indeed of any other locality than that to which his sister (own or tribal) goes as a wife. Yet he cannot marry a woman of the permitted locality if she happens to be of the same *būdjan* (totem) as himself.

The initiative in these ceremonies is taken by one of the principal men. It is usually either the principal man of the united tribe, or it may be the principal man of some one section of it. This man may either act on his own impulse, or he may be moved by the representations of some other man of influence, or perhaps more frequently after the matter has been considered by the old men who form the "Great Council." This Great Council is composed of the most eminent men, that is, the heads of totems, warriors, orators, doctors, wizards; it holds its meetings in secret, at some place apart. Its determinations are announced to what may well be called the general council of the tribe, that is, an assembly of all the initiated men, held at some place apart from the camp where the women and children are.

When it has been decided that there are a sufficient number of boys ready for initiation, the headman sends out his messenger. In the tribes which have the class-system in a vigorous condition, it is frequently the case that the messenger is necessarily of the same totem as the sender of the message.¹ Let us suppose the latter to be a Wiraijuri headman of the Yibai-Gürimül (Opossum) sub-class and totem. The messenger must also be Yibai-Gürimül, and it is to a principal man of the same that his message is delivered, who in his turn sends it on in the same manner. Thus the message travels throughout the whole community by being carried by the Gürimül totem, whose headman communicates it to the principal men of the different totems which form the local groups. The messenger carries with him, as the emblems of his mission, a complete set of male attire, together with the sacred humming instrument, which is wrapped in a skin, and carefully concealed from women and children. It is therefore, in such cases, the totem which assembles the whole community.²

In cases where the social organisation has broken down, the procedure is different in some degree. I have said that among the Coast Murring it is the intermarrying local groups which are strongly exogamic, and this practice obscures the effect of the still existing restriction as to the totem. The local groups are arranged under two great geographical divisions, named respectively *Katungal*, that is, sea-coast people, and *Baiangal*,

¹ This is not the case in all tribes. In the Dieri tribe, according to Mr. Gason, the head of a *marde* (totem), in sending a message, would probably send one of his own name, but not necessarily; he might send any one else.

² I learn from Mr. J. C. Muirhead that the practice of sending a message through a totem occurs in Northern Queensland, and further, that even the message-stick which is carried by the messenger must be made of some tree which belongs to the same class division as both the sender and the bearer of the message. In the tribes referred to the whole universe is, so to say, arranged under the two primary classes.

that is to say, forest people.¹ Assuming that the ceremonies were ordered to be held by the principal headman of the Katungal, he would send his messenger to the headman of the Baiangal, who would take action accordingly. The social organisation has here no apparent part in assembling the community, for the messenger is not necessarily of the same totem name as the sender.

I now take some other instances for the purpose of illustration. The last great meeting of the Kurnai tribe was called together by the headman of the Brabrolung clan, who was also the most influential man of the northern moiety of the tribe.² The message was carried by a young man of this headman's local group, and he bore with him as his credentials one of the "great man's" weapons.³ He delivered it, together with his message, to the principal man of the southern moiety of the tribe, who then, gathering his people together, led them to the appointed place, where meanwhile the northern half had collected under their headman and prepared the ceremonial ground.

In the Woi-worung tribe of the Yarra River it was the headman who summoned the assemblies for initiation. He sent a messenger to the headmen of the local groups, who carried a man's belt hung on a reed. In the Adjadura tribe of South Australia the ceremonies are ordered to be held by the headman of the whole tribe by his messenger, who carries a message-stick marked in such a manner that it serves to illustrate his message; together with this there is also sent a sacred humming instrument.⁴ In the Chepara tribe of Southern Queensland the initiation ceremonies are called together by the principal headman, who sends his messenger (usually a son—own or tribal) to all the other headmen. The messenger carries a message-stick and a sacred humming instrument.⁵ These instances will suffice to show how similar the mode of calling together these assemblies is in far distant parts of Australia.

¹ Properly speaking, *Baiangal* means "belonging to tomahawk," and refers to the use made of that implement for chopping holes in climbing a tree. The Baiangal are therefore, correctly speaking, "Tree-climbers"—gaining their living in the forests, climbing in search of game, as distinguished from the Katungal, who live on fish, and other produce of the sea, and are therefore properly spoken of as "Fishermen." The whites know them by this name, but speak of the others as "Waddy men," from the word *waddy*, colonially used for *tree*.

² It will be well, in order to avoid misapprehension, to confine the use of the word *clan* to the local division of a tribe which has agnatic descent. Mr. Fison has suggested to me the word *horde*, as suitable for the local division of a tribe having uterine descent. The reader will please bear in mind that where I use either of the above terms, I do so in the sense indicated.

³ *Gedraeil*—great, and *Kurnai*—man. This is the designation of a headman in this tribe.

⁴ Mr. Thos. U. Sutton, of Yorke Peninsula, South Australia.

⁵ Mr. J. Gibson, J.P., of Stanmore, Queensland.

The Ceremonies of Initiation.—I now proceed with reference to the five tribes which I have taken into special consideration. The ceremonial meeting having been called together, that moiety of the community which called it prepares the ground and gets all ready for the arrival of the various contingents. Some spot has been selected where a good supply of food is obtainable. The preparation of the ground is regulated by the peculiar form which the ceremonies have taken in any one tribe. The best illustration which I can give will be by describing the procedure of the Coast Murring, which is a good general example of the ceremonies of the great group of epigamic communities which I treat of in this paper.

The ceremonies themselves may be one of two kinds:—either the full ceremonial, called *Būnan*, or the abbreviated ceremonial, called *Kādja-wālūng*.¹ The ceremonies are also spoken of generally in either case as *Kūringal*.² The difference between these ceremonies is partly that the *Būnan* lasts three or four days, while the *Kādja-wālūng* lasts about half that time, and partly that in the latter not only are the proceedings abbreviated, but that some which belong to the *Būnan* are omitted. For instance, the *Būnan* is held in a carefully prepared ground, where every stick or stone has been carefully removed, and the earth has been thrown up in a circular mound about the place of ceremony. The novices are placed on this mound in front of fierce fires, and are kept there sufficiently long to fully test their power of endurance. Each novice holds upright in front of himself his mother's "yamstick," on which are hung the belt of manhood and the other articles of attire with which he is by-and-by to be invested. It is inside this circular mound that many of the preliminary dances, at which it is lawful for the women and children to be present, take place. A cleared path leads from the great *Būnan* for some distance through the bush to a retired spot where is the small *Būnan*, enclosed by boughs, in which the tooth is knocked out. The women are sent away, under the charge of some old man, from the great *Būnan* before the procession of the initiated and of the novices takes place along the cleared path.

The difference between the greater and the lesser *Kāringal* is mainly in the presence or absence of the circular mound, of the cleared path of the small *Būnan*, and in the more or less extended and developed character of the ceremonies.

I shall now describe the proceedings as carried on at the

¹ Probably from "*būning*"—to knock or strike, having reference to the knocking out of the tooth. *Kādja-wālūng* means "raw ceremonies," having reference to absence of the roasting process, which is only done at the *Būnan*.

² From *Kūring*—the forest or bush.

lesser ceremonies of the coast tribes. On the arrival of a contingent, led by the messenger who summoned it, its women and children halt at a distance, and a peculiar long-drawn "*Coo-ee*" is uttered by the messenger. On this being answered from the camp, the men follow their conductor to the council-place, while the women proceed to encamp. The spot which they occupy is on that side of the general encampment which faces in the direction of their country. Meanwhile the men have sat down at the council-place, and after a silence the headman of the newly arrived contingent and the headman of the people who receive it, converse, and it may be that all the old men consult together. The arrival is often arranged to be about nightfall.

The next proceeding is for all the men present at the council-place to run in a long winding line from it to the general camp. The line is headed by one of the old men, or sometimes by the "sister's husbands" of the novices.¹ Each man holds a bough in his hand,² which is struck rhythmically from side to side as the long line winds stamping forward with deep guttural exclamations of *Huh! Wah!* The signal for the start of this snake-like procession is given by the last-arrived messenger, who draws out his concealed *mūdji*, and swinging it causes it to make a loud roaring noise.³ So soon as this is heard the men commence their winding course, and the women start up in the camp, roll their rugs, and commence to drum and to sing the "tooth song," which is intended to cause the novice's teeth to come out easily. The procession of men is by this time winding, stamping, and shouting *Huh! Wah!* through the entire encampment, visiting each separate hut, and, as I may say, gathering the women and children into a clear space outside of it. Here the women and children crowd together, while the men dance round them in more than even double fold, if the line is long enough. One of the men now starts forward, shouting loudly the name of the locality of the newly arrived contingent, which is hailed with shouts by the men, who then silently raise their boughs over the women's heads towards the sky. In this way a number of the most distant localities from which there are people present

¹ In the coast language, *kabo*; in Ngarego and Theddora, *jambi*; in Wiraijuri, *māricā*. These words all mean "wife's brother," as well as "sister's husband"—for sisters are exchanged as wives in these tribes under arrangement of the respective fathers.

² I have seen some men hold a boomerang instead.

³ I use the word "snake-like" because it best represents the movements of the procession. That this resemblance is not merely fanciful may be seen from this, that the very first overt act by which the women are made aware that the men have determined to hold a *Kāringat* is, that one of the last initiated young men is sent to run through the camp shouting "a snake! a snake!" and the men then follow and form the procession. In the coast tribes the humming instrument is called *mūdji*, or *mūdthi*.

are pronounced—not only to the assembled community in words, but by the upward-pointed gesture with bough, boomerang, or finger, to the Great Master;¹ for this is the gesture-sign by which these tribes indicate the name of the dreaded Spirit, which it is not lawful to speak before the uninitiated, or in places where it is not sanctioned by the performance of these ceremonies, which he first instituted and taught to his people.

After this ceremony the evening is spent in singing and dancing for the general amusement.

When all the contingents have arrived the council of old men determines the day on which the great ceremonies shall be held. These are commenced by a stamping, winding procession as before, but this time the women and children are not only closely crowded together, but crouch on the ground, and those women whose sons are to be initiated are placed in front of the group. The men having danced in a long chain back and fro before the women, halt in front of them, and, directed by the principal old man, closely cover them up with rugs.² The women all this time are droning out the "tooth song." At a sign from the old man who is the master of the ceremonies, each *kabo* seizes his particular charge by the arm, and holding him tight drags him forth and hastens away with him, followed by the shouting crowd of men.³ Some old man is left behind to see that the women behave themselves, and do not indulge in any unlawful female curiosity by following the men.

When at a distance from the camp the boys are rubbed with

¹ The meaning of "*Biámbar*," as "master," is quite clear to me. A man is the *Biámbar* of his wife and children; an old man is *Biámbar* as regards the young men who obey his orders; the great warrior or wizard who rules the local groups is its *Biámbar*; the principal headman of all is the *Biámbar* of the tribe, and *Daramálla*, the Great Spirit, is the *Biámbar* over everything.

² In the *Būnan* ceremonies the women are not covered up at this time, but each mother sits in a camp behind her son, who is on the mound undergoing the "fire ordeal"; the other women bring further back. The Wiraijuri follow much the same practice above described. The Wimmera tribe of North-Western Victoria also roasted the boys on a mound.

I observed at a Coast *Kōringal* that a very old man of the Bidwelli tribe, which has no initiation ceremonies, but who was at the encampment, being friendly with all, and related by marriage to some of the contingent visitors, was not permitted to join, but was driven crouching among the women and children, and together with them was covered with rugs. One of the Krauatun-Kurnai, who have no ceremonies, as I have before said, who was also at the camp, went away altogether when the proceedings commenced.

³ This shouting is intended to cover the noise made by the departing men. The women and children are supposed not to know what has become of them when the rugs are taken off by the man left in charge. At the *Būnan*, the departure of the novices and their guardians along the path is marked by the men, who continue to run round the inside of the *Būnan*, making a noise like "p-r-r p-r-r," and gradually stealing off one by one. During this time the women have been lying down outside the circular mound at the side furthest removed from the path leading to the small *Būnan*.

red ochre and fat, and each one is covered closely with a rug or blanket so that nothing but his face is visible.

The ceremonial procession now commences, and each *kabo* is deeply engaged in giving his boy a preliminary instruction as to his duties. These may be summed up as follows:—

(1) He is on no account to stare about him, but to walk with his eyes fixed on the ground, excepting when told by his guardian to look at anything.

(2) He is not to laugh, nor to show the slightest sign of being conscious of that which he sees, or hears, or that which is done to him.

(3) He is, however, to pay the greatest attention to all that he is told, and he is, moreover, told that for disobedience of these commands he may be struck down instantly, if not killed, by the magic powers of the old men.

It is the duty of the guardian to watch over his charge, to care for him in every way, to give him food and drink, when these are allowed to the novice, and above all to fully explain the ceremonies; to teach him the name and attributes of *Daramûlûn*, and in every way to be to him a "guide, philosopher, and friend."¹

The proceedings may be divided into three parts; the procession, the encampment, the return; and I shall for convenience deal with the ceremonies in that order. Before proceeding with my description I must, however, make some general statements which apply to the whole, from beginning to end. So soon as the initiated men with the novices are out of sight of the camp, or at the greater ceremonies have left the *Banan* circle—the women being left behind—it becomes lawful to openly speak of those things which elsewhere are not spoken of at all, or only in a hushed tone. Even, in some respects, the language is altered, for many words are now used for which at other times, and in other places, quite different ones are used. The principle underlying this is, that all things belonging to these ceremonies are so intimately connected with *Daramûlûn* that they may not be elsewhere spoken of without risk of displeasing him, and the words which imply these ceremonies, or anything connected with them, are therefore forbidden. For instance, the name of *Daramûlûn* may now be freely uttered,—in what manner I shall shortly show,—whereas at other times he is only alluded to by the general name of *Biâmban*²=master, or *Papang*³=father,

¹ Among the Wiraijuri the novice was shrouded as I have described, leaving the face uncovered; but among the Theddora the rug was so arranged that a flap hung down so low over the face that the novice could see nothing but the heels of his *jâmûi*, whom he closely followed.

² Coast language.

³ Ngarego language.

or more generally by a simple gesture by pointing the forefinger of the right hand towards the sky.

The Procession.—This is to some retired and secret place, which may be several miles distant. All the men throw off the silent, self-contained, even dignified manner which is so marked in many old blackfellows, and all, from the youngest to the oldest, become in some respects more like a set of schoolboys let loose for a "lark," than anything else I can think of. From this time until the end of the proceedings, when the men resume their ordinary manner, there is a very peculiar practice of speaking in what I may call an "inverted sense." The most extraordinary statements are made to each other, and to the novices, but at the end of each sentence is added the word *Yah!* which means, as the men themselves explained by English words, "gammon," or "a sell." Thus the real intended meaning is always the opposite of the apparent meaning of the words used. For instance, I have heard one of the old men say to one of the novices, with a comic manner, "I say, boys, you can go home now — *Yah!* we have done with you — *Yah!*" The conversation hardly ever flags, but jests, replies, and retorts are bandied from one to another, accompanied by a constant fire of *Yah!* until the word becomes utterly wearisome. It is said that this practice is intended to teach the boys to speak the straightforward truth, and the *kabos* thus explain it to them.

The procession is broken into a number of stages, at which the boys, each attended by his guardian, stand in a row with down-cast eyes; at these halts there are performances in which all the men take part, under the direction of one or two old men, who act as masters of ceremonies.

These performances are some of them intended to amuse, some to instruct, and some to warn and terrify. For instance, the first performance at the *Kuringal*, which I am now describing, was that two old men sat down on the ground, in front of the novices, and proceeded, with most ludicrous antics, to make a "dirt-pie," after the manner of children, while the men danced round them. The *kabos* told their charges that this was to show them that they must no longer consort with children and play at childish games, but for the future act as men.

Other performances represent hunting incidents. At all these stages the pantomimic representation is accompanied by dancing on the part of the men generally. The dancers usually perform their part standing in front of the novices, so as to leave a small space open, and into this suddenly rushes one of the wizards, who while dancing, sinks down almost to the ground, and, often with fearful contortions, exhibits between his teeth some substance which he is supposed to be able to bring up from his

inside at will, and which is believed to be of terribly magical power. The wizard is supposed to be able to injure or even kill any one by invisibly throwing such a substance at them.¹

Here, then, the novices for the first time witness the actual exhibition of those magical powers of the old men of which they have heard since their earliest years.² They have been told how these men can produce from within themselves certain deadly things, which they are then able to project invisibly into those whom they desire to injure or to kill; and now the boys see during the impressive magical dances these very things, as they express it, "pulled out of themselves" by the wizards.

There is a succession of these performances, and the accompanying dances until the scene of the main ceremonies is reached. Throughout the whole course the singular "inverted speech" is used, and among other devices for impressing on the novices the absolute necessity of obedience by them to the directions of the old men, saplings growing on the line of route are bent over into arches, under which the novices pass, sometimes even being obliged to crawl on the ground to do so. All this time, during the march, the novice is closely attended by his guardian, who is most of the time engaged in earnestly instructing him, and in explaining to him the meaning of the various performances which are gone through by the men.

The Magic Camp.—A camp is formed when the spot is reached which has been fixed upon for the site of the tooth-knocking-out ceremony. The first thing done is the lighting of a "magic fire" on an open space round which the different camps are disposed. The novices, always closely attended by their *kabos*, are caused to lie down on a couch of boughs, closely covered over by their rugs or blankets. The couch of boughs is intended to keep them off the ground, which otherwise might make them ill, if damp. The rule is that the novices and their guardians are to encamp themselves near the men of that contingent which has come from a place most distant from their own country, in

¹ The wizards are supposed to obtain these substances from *Daramiläa*, and the most potent of all is the crystal of clear quartz which is intimately connected with him. A Wirajuri man, who had in some dream or vision, or perhaps under the effect of something like the so-called electrobiology, imagined himself to have been taken by his father on a thread up to the "Camp of *Baiaimai*," beyond the sky, described him to me as a very aged man seated in a kneeling position, with a quartz crystal extending from each shoulder to the sky above—that is to say, a second sky from the earth. Other magical substances which the wizards extract "out of their internal consciousness" are like sinew, like flesh, like intestine, like chalk, like black stones, or pieces of bone, &c.

² Speaking of these matters with a young man of the Coast Murring he said to this effect:—"When I was a little boy people used to tell me that the old men could kill people with things they pulled out of themselves, but I hardly believed it; when I was taken and made *gungung-ira* (raw tooth—i.e., initiated), I saw the old men bring these things up—how could I doubt then?"

order that, being placed entirely among strangers, and away from the countenance of their kindred and friends, they may be more easily impressed by that which they see and hear.

A constant succession of ceremonies, of pantomimic representations, magic dances, songs interspersed with the inverted speeches, and the accompanying "*Yah*," now continue, until far into the night, even until very near morning. Throughout all this there is during the dances a constant display by the wizards of their magic powers. Occasionally, when late at night the men become somewhat tired and seem inclined to fall asleep, the *mūdji* is swung in the gloom of the forest, and as its roaring sound is heard the people are roused to renewed efforts.

The *mūdji* is held to have been first made and used by *Daramālūn*, when in the beginning of things he instituted these ceremonies, and constituted the aboriginal society as it exists. The noise made by it is the voice of *Daramālūn*, calling together the initiated, and, moreover, it also represents the muttering of thunder, which is said to be his voice "calling to the rain to fall and make the grass grow up green."¹

Throughout all this time the novices are kept in a constant state of excitement and uncertainty. The performances, songs, and dances are alternately exhibited by the two tribal moieties—one performing, and the other witnessing. At the end of each of the "Acts," if I may use the term, there is a short halt for rest. The men sit in their camps, and talk or smoke, or even snatch "forty winks." The novices are told to lie down, in such words as these: "Now we have finished. You can go to sleep till morning—*Yah!*" No sooner have the novices been settled under their rugs, and might be supposed to be dozing, than some old man rushes into the magic ring, and commences a fresh set of performances, and the novices are at once roused up and brought back to the fire.

The ceremonial performances.—All the men during these performances are, or should be, quite naked and rubbed over with powdered charcoal. Of the ceremonies the greatest is that of the extraction of the tooth, which, with the group of tribes I now treat of, is one of the upper middle pair of incisors, usually the left one. A place is prepared out of sight of the magic fire, by clearing everything off the ground, and a pair of holes is dug in this space for each boy to stand in during the ceremony. A number of men hideously disguised² kneel in front, and the man

¹ These are the very words used by Umbara, the minstrel and improvisatore of his tribe, when speaking to me on these subjects during the *Kūringal*.

² The disguises are made by beating out stringy bark fibre into what looks much like coarse sheets of yellow tow. With these the performers are covered from head to foot. Huge wigs are made of it, and all that is visible of the

at each end of the line holds a strip of bark in his hands, with which, by striking on a small heap of earth raised in front of him, he can produce a noise like the distant explosion of a gun. At one side of the ground the figure of *Daramulün* is cut on some large tree, in the attitude of dancing the magic dance.

Sometimes other figures or marks are made in the surrounding trees. All being ready, the principal old man gives the signal, and the novices being guided from the camp with their eyes fixed on the ground at their feet, the *mudji* is swung, loudly roaring somewhere out of sight. The novices are now placed, each with his feet in a pair of holes, and his *kabo* stands behind him.

The old man now gives a signal, and the end man of the row of hideous kneeling figures raises his piece of bark, and brings it down with a loud report, and at the same time he and all the others surge away from his end of the row, making a rumbling sound, in imitation of the surf breaking upon and rushing up the shore; the other end man now in his turn strikes the ground, and he and all the men surge back with a similar deep sound. This is intended to represent the thunder from the mountains rolling back the sound to the sea.

When this has gone on rythmically for a little time the men jump up and rush forward towards the boys, who have been told to attentively observe them. The *kabo* now kneels on one knee, so that the other forms a seat on which the novice sits, while another *kabo*¹ stands immediately behind, with his right arm round the boy's body, and his left hand over his eyes, so as to blindfold him, and at the same time turn his face skywards.²

The men now commence an excited dance, while from some place of concealment near at hand the old man whose office it is to knock out the tooth dances forward with a wooden chisel in one hand, and a wooden mallet in the other.³ Sometimes he performer is his black face, which is distorted by strings tied across his nose and reverting his lips.

¹ It must be borne in mind that the boy has what I may term "tribal" *kabos* as well as "own" *kabos*, just as he has "tribal" sisters, as well as "own" sisters, and in the future will probably have "tribal" wives, as well as his "own" wife.

The distinction between these advanced tribes, which have individual marriage and agnatic descent, and the less advanced, which have some form of group marriage and uterine descent, is well marked by these "own" and "tribal" wives. In the advanced tribes the "tribal wife" is only nominally a wife, excepting in some tribes, on very rare ceremonial occasions, while in the backward standing tribes she is generally a wife in fact, although perhaps only an "accessory" one.

² With the Ngarego and Coast tribes the boy is in some cases seated across his guardian's neck, just as is figured by Collins. With the Wirajuri the boy's two guardians stand, one behind him and one at one side of him, and thus hold him during the operation.

³ The mallet is a piece of wood about 15 inches in length, and flattened at the four sides.

pushes back the gums from the boy's tooth with his finger-nail, but sometimes this is dispensed with. He then seizes the boy by the head, and inserting his own lower incisors underneath the tooth which is to be extracted, gives a "hoist" up to loosen it. It is said that a tooth occasionally comes out under this process, but more frequently it does not, and then has to be knocked out by placing the wooden chisel on it, and striking it with the mallet. All this time the men round are frantically jumping up and down, shouting "*Wiri, Wirri!*"¹ and as many as are near the operator patting him on the back to encourage him. Under such circumstances, more especially as the operator endeavours to keep up the magic dance himself, it is not surprising that many blows are sometimes required before the tooth is extracted. I have known as many as thirteen blows to be given. When the tooth holds fast, the explanation always given is that "the boy has not kept to himself, but has been too much in the company of the girls and women."²

When the tooth is extracted it is taken charge of by one of the old men. The boy is soothed and told that "it is all over now." He is enjoined to be careful not to spit out the blood flowing from the gum. He is now almost a man. When all the boys have been made *gumbang-ira*³ they are taken to the figure of *Daramūlūn*, and instructed concerning him, and cautioned against revealing anything about him or his ceremonies to women or children, under the severest penalties.

All the disguises are now stripped off, and thrown in a heap on the cleared space; the men stand round in a circle, facing outwards, and at a given signal scratch together a large heap of rubbish over it; then turning their faces towards the heap extend their hands several times downwards over it.

The boys are now taken back to the magic fire, and, being told that no more will be done to them, are each one invested with

¹ *Wiri*—quick.

² One of the Theddora, in telling me about his initiation, said that his *jāmbi* impressed upon him very earnestly that he must answer the questions of the old men truthfully in all things. "If the old men ask you whether you have been too free with any of the women, tell them the truth, because otherwise they may perhaps kill you, or at least send you away into the bush for a long time by yourself."

In the Wirajuri tribe a certain boy had often been reproved by the old men for playing too much with the little girls, and not mending his manners the old "blackfellow doctor" took him in hand and proceeded to extract from his legs certain strands of the "woman's apron" which he said had got into him in consequence of his behaviour. A further consequence of this was that when he was initiated subsequently this same old man could by no means get the tooth out, until after a very great number of blows, which then was only successful when he had rubbed the boy's neck and again extracted quite a number of pieces of the "woman's kilt." This was indeed a case of being "tied to an apron-string."

³ *Gumbang-ira*—raw or bleeding tooth.

the belt, the kilt, and other insignia of manhood. The performances, which are intended to complete the initiation of the youths by instructing them in their new duties as men, are now commenced. These are, as I have before said, of different kinds.

The pantomimic representations.—These are of several kinds; some are amusing pieces of buffoonery, others represent the different totems, and others again are what may be truly called "moral lessons." Some illustrations will make this clear.

An old man runs into the magic circle carrying a lump of wood as if it were a young child. He imitates the crying of an infant, and this is supposed to be a sick one. Other men now join him, who pretend to be doctors, examine the child, and go through the usual remedial course—pretending to extract the disease in the form of pieces of stone, wood, bone, and other rubbish; the whole of this is very comically done, and even the old "doctors" themselves join in it.

Another instance is where two old men are seen standing beyond the fire at the edge of the magic circle; to the left and in the gloom of the forest are the other men crouching together. They are "Rock wallabies," and one old man proceeds to "drive" them past the other one, whose business is supposed to be to knock each one over as it passes, with some weapon. This of course represents the hunting of the Rock wallabies, by driving them past other hunters in ambush. But this pantomime is intended to be comic. The wallabies are driven one by one, hopping past the hunter, who, simulating weapons with pieces of stick and bark, always misses his object, and is therefore comically abused and beaten by the driver. When the wallabies have all passed in front of the fire, and have laid down in the shadow at the other side, the two old men rush to the fire clapping their hands, and shouting the word meaning "Wallaby." All the performers then rush in and form a dancing circle, shouting the word in time to the dance. This dance is always of the same character. The legs are kept somewhat apart, and at each jump the knees are slightly bent, but there is none of the quivering used at the Corroborree; at the same time the arms, hanging down, are swung to and fro across the front of the body: this is the whole step and action. It is hardly possible to imagine a wilder scene—a more complete "witches' sabbath"—than this, where a number of naked blackfellows, made truly hideous by being rubbed with charcoal, dance furiously in this manner by night, round the magic fire, in the depths of the forest, shouting some word in time to the dance.¹ It is completed when the old men rush into the ring and dance crouching, so that the tips of their

¹ This is precisely the magic dance which I have described in "*Kamilaroi and Kurnai*," p. 252, as being performed by the "Banjil Barn."

fingers almost touch the ground, or even on their knees, until sometimes, apparently overcome by the magic influence, they fall down, seemingly in an exhausted state.

Other dances merely represent the "totems." For instance, the howlings of what seems to be a pack of dingoes is heard in the forest. The sounds come nearer, the howls answering each other, until at length the leader of the band runs in on all fours to the fire, followed by the others. They run after each other round the fire imitating the actions of dogs, until, as before, the leading old man jumps up, clasps his hands and shouts the native word for "wild dog." All then join in precisely such a dance as I have before described.

What may be called the "moral lessons" have, at first sight, a very immoral appearance, and it is not easy to describe some of them. They represent in pantomimic dances various offences against propriety and morality, and the old men and the guardians point these representations by telling the novices what will be the consequences should they, after leaving the initiation camp, commit the represented offences. I have heard the old men say, for instance: "If you do anything like that when you go back, you will be killed"—that is, either by magic or by direct violence. That which is thus forbidden I can sufficiently describe by saying that it includes, *inter alia*, disrespect towards the old men, the interference with unprotected women or the wives of other men, and those offences for which, it is said, the Cities of the Plain were destroyed by celestial fire.

Besides these representations there are many merely "magic dances," which seem to be performed for the purpose of enabling the wizards to exhibit their power of "bringing things out of themselves." The mode of dancing is precisely that which I have described before, but the word shouted is either the name of some particular magic object, as of the quartz crystal, or the name of some part of the body, as head, legs, &c., which may become the subject of the magic influence.

Among these magic dances those of *Daramūlūn* and *Ngalalbal* are pre-eminent. The former is to the word *Daramūlūn*, and the old men then show all they can do in bringing up those substances with which it is said he provides them.

The *Ngalalbal* dance is rendered very effective by being preceded by the "duality" *Ngalalbal*, the wives of *Daramūlūn*. These are seen to glide from the forest past the fire, and to disappear in the gloom beyond, to a slow and rather melancholy air sung by the audience, the words of which may be rendered, "*Ngalalbal*, you two coming from afar, where are you going to?"¹ *Ngalalbal* is represented by two men shrouded in rugs

¹ I think this name is derived from *Ngalal* = sinew, in reference to the sinewy

precisely as are the novices, and each protruding a boomerang from the small space left at the face.

Throughout all these performances there is the constant use of the "inverted speech," and the novices are continually instructed by their guardians, and specially by one or other of the old men.

One very significant part of the ceremonies remains to be noted, and I may now also say that it occurs periodically from almost the very commencement of the ceremonies until their end.

At the conclusion of some performance—it does not seem to be confined to either kind—the old men rush towards the novices, followed by the others. Each man rhythmically moves his hands alternately from himself to the novices, palm upwards, as if he were scooping something from himself to them, at the same time emphatically keeping time with the word *nga* (good); the novices on their part, as also the *kabos*, move their hands as if they were drawing something towards themselves. When this has gone on for a short time the old men cease, and utter the emphatic words, *Yah! Huh! Wah!* at each word making a downward motion of the hands towards the boys.

This is said to be done for the purpose of making the boys "so that *Daramūlūn* likes them," and I feel there can be no doubt that the idea is that the magic influences of the ceremonies is thus passed to the boys, and "clinched" by the emphatic motion of the hands. In other words, the boys are filled with the influence and made acceptable to the Great Spirit *Daramūlūn*, who instituted these ceremonies, and who is supposed to watch them whenever performed.¹

These proceedings go on until far into the night, and at early dawn the magic fire is replenished, and for a time the magic dances are repeated. During the day the men rest, or go out to hunt, and the boys remain closely covered with their rugs in charge of their guardians.

legs of the Emu, which is *Ngalaibal*, and from *bal*, a dual affix. This female duality is probably the analogue of the *būlūm-boukan* = two *baukan*, who are, according to the Kurnai belief, the mothers of the youth *Būlūmtūt*. It is said that these two mothers and one son ascended to the sky *aid* Wilson's Promontory at the time when an ineffectual attempt was made to steal the fire of the Kurnai.

¹ I have seen one of the old men rush furiously at one of the novices, seize him by the head and apparently bite some part of it. This is supposed to pass to him the power of "bringing up things." To me the most remarkable feature was the utter impassibility shown by the boys to all these proceedings, which must have certainly roused alarm in their minds. I remember one young lad of about twelve, who showed no more sense of anything going on round him than if he had been a bronze statue, and yet, as he afterwards said, he felt quite sure several times that he was about to be killed.

At night the ceremonies recommence, and are a repetition such as those which I have described. When it is considered that they have lasted long enough, the final ceremonies of the return procession are commenced.

The magic fire is covered up with earth and rubbish, and carefully trampled down and extinguished—finally by the emphatic downward motion of the hands. But before this some dry bark has been cut; pieces are placed in pairs together, and being tied at the ends with a few leafy twigs, are lighted at the magic fire. One of these fire-sticks is given to each of the novices, in order that he may carry it with him and light the fire which he is to use during the time of his probation. It is believed that the omission to do this would cause fearful and destructive storms.¹

During the return there are certain ceremonies of which the following may serve as an example.² The procession being formed, and on the march from the magic camp, the roaring of the *mudji* is heard and a halt is made. The old men, having carefully cleared a piece of ground, proceed to mould in earth, in high relief, the life-sized figure of a naked man in the attitude of the dance. He is represented as having his mouth filled with "magic substances," and in the full ceremonies is surrounded by an assortment of the native weapons. This is *Daramūlūn*. The novices are brought and placed in front of this figure and the dances take place—one to the word *Daramūlūn*, the other to the word *Ngatalbal*. It is now that the novices are finally instructed as to this being and his attributes. I have heard them

¹ It is a common belief that the old wizards have magical substances scattered in the *Kuringal* ground, in order to injure or kill any person trespassing upon it after the ceremonies are concluded. On no account would a woman enter one knowingly, for such an act would certainly be expected to be fatal to her.

² As showing how the various "stages," if I may use the word, differ in different tribes, I take the following from the most distant one, the Wirajuri, which precede the extraction of the tooth:—(1) A strip of bark is taken spirally from a large tree down to the ground. This represents a path from the sky to the earth, down which *Daramūlūn* descends; (2) the figure of *Daramūlūn* moulded in the ground. *Daramūlūn* is in this tribe not the supreme "master," but the son of *Baiamai*, who rules everything; (3) the moulded figure of *Daramūlūn*'s tomahawk, which he threw after the Emu as he was descending by the path from the sky to the earth; (4) two footprints of the Emu a little distance apart from each other, made when it was endeavouring to escape from *Daramūlūn*; (5) the figure of the Emu itself where it fell. Magic dances, exactly such as those I have described, take place at each stage, at which the wizards "bring up" and exhibit their magic substances. I have heard of more than one *Daramūlūn*—in fact, of "several *Daramūlūns*, the sons of *Baiamai*. This again suggests the "sons of *Bunjil*," of the Woi-worung tribe—namely, six of the totems (animals and birds) which, together with *Bunjil*, have become stars and thus watch over the fortunes of men, i.e., of Woi-worung men. Moreover, *Bunjil* (as the star Fomalhaut) has his two wives with him, which recalls the dual wife *Ngatalbal*.

told by the principal old man "This is the master (*Biamban*), who can go anywhere and do anything." They are also cautioned never to reveal this or to make such a representation unless at the ceremonies, under pain of death.

The figure is now carefully covered up, and the procession proceeds a further stage on its march, when another halt is made and the novices are seated at a distance with their guardians. The old men, meanwhile, disguise several of the others with stringy bark fibre as I have before described, but in this case the performers were entirely covered, face and all, and were connected together by a cord passing from head to head.¹ During this time a grave is dug, and one of the old men, lying in it on his back, after the manner of a corpse, is lightly covered up with sticks and rubbish and earth, and so far as possible the natural appearance of the ground is restored, the excavated earth being carried away to a distance.² The buried wizard holds a small bush in his hand, resting on his chest; the bush appears therefore to be growing in the soil, and other bushes are stuck in the soil to heighten the effect. All being ready the novices are brought to the edge of the grave. The "singer" is somewhere close at hand, and the performers at perhaps two hundred yards' distance. In the instance which I am now describing, the singer commenced a well-marked but melancholy chant, the words of which are no more than the class-name of the buried man, and the word for the stringy bark fibre used of the disguise.³ The performers now commenced to move in a kind of slow dance, keeping time with the song. The performers in their advancing line held a small strip of bark in each hand, and by striking these together with a sharp sound they marked the time of the song and of their steps. A little at one side, and advancing with them, are two other disguised men, who represent two very ancient and therefore powerful wizards, by whom the proceedings are directed. Each one, as signifying his great age, assists himself in his tottering dance with a staff in each hand. When the strange procession reached the grave, it wound round it and ranged itself on the side opposite to the novices. The song still continued, and then the bush held by the buried man began to move and to quiver—to move more and more, until

¹ In Riverina, where bark cannot be always procured, long tussock grass is used for these disguises.

² In one of the Theddora ceremonies two men were buried in this ceremony, each in a crouching position, and were covered with a sheet of bark and earth. In this tribe the usual form of interment was in a round pit, sometimes in a side chamber excavated at its bottom, and the corpse was buried in a crouching position with the knees drawn up towards the head.

³ *Yibai*—i.e., the equivalent of the Kamilaroi *Ipai* and *Bûra-bûra*—stringy bark fibre.

suddenly the earth opened, so to say, and the wizard rose, and throwing off his concealment, danced his magic dance in the grave and exhibited his magic substances.

The proceedings being over, the disguises were as before covered up and concealed.

This ceremony is most impressive. It is the bringing back to life of the dead wizard by other wizards invoking his class-name. In this case the buried man was of the sub-class *Yibai*, which is the equivalent of the Kamilaroi *Ipai*, and according to his own statement, the name *Yibai* is also a synonym of *Daramūlūn*.¹ The last one of the secret ceremonies takes place at some water-hole or creek. The novices are brought to the water's edge, being told in a joking manner, for instance, "We are going to catch some fish—*Yah!*"

The men go into the water and thoroughly wash themselves, so as to remove all traces of the charcoal with which they have smeared themselves, and together with it leave everything behind connected with the secret ceremonies. While they are doing this they splash the water over the boys, and conclude by passing to them a final portion of the magic influence, and which the novices and their guardians draw to themselves as I have before described. Finally, with an emphatic *Yah! Huh! Wah!* and a downward movement of the hands, all is ended.²

The men go into the water-hole with the curious part joking, part serious, part buffoon manner of the ceremonies, and come out with their ordinary manner. The old men resume the quiet, somewhat self-contained and reserved manner which I have observed to be so marked in many of them.

There are now only two more proceedings before the novices are taken to the camp. As the men all move off homewards, the novices and their guardians go on a little ahead, and the *mūdji* is now brought out and loudly sounded. The novices are brought back, and the headman shows to them the *mūdji*, and the wooden chisel, and explains their use, and also forbids them to reveal anything that they have seen or heard under pain of death. All now proceed towards the main camp, or to that place to which the women have been directed to proceed, and to erect a new camp.³ The novices now walk with the men,

¹ It is well to note also that this man is of the *Malias*-Eaglehawk totem, and that in many tribes of Victoria, *Buajil*-Eaglehawk, is the name of one of the two primary class divisions, as well as also the name of the Great Spirit of those tribes.

² The boys are forbidden for a long time afterwards to swim, or even to go into deep water, which it is thought would wash out of them all the ceremonial influence.

³ In all cases a new camp is formed, even if it is only moved a couple of hundred yards.

attended, but not guarded, by the *kabos*, and sometimes, in order to still more impress them, a number of men, who have hidden themselves in the path, rush out violently, spears aimed as if about to kill the youths, who are threatened with death if they reveal anything to the uninitiated.¹

Before reaching the camp where the women are, the youths are carefully dressed with the full equipment of a man, and painted after the manner customary in the tribe. On nearing the camp a peculiar signal is given, and on this being answered by the women each youth is raised on his guardian's shoulders, and the men close in round, holding up branches so as to effectually screen them from sight. The procession then moves slowly forward towards the camp. It is frequently the case that the principal old man walks a little apart, on one side and towards the rear.

During the absence of the men the women have made a hut of boughs resembling one of the ordinary habitations, before which there is a smoky fire. In this hut stands the mothers and grown-up sisters of the newly made young men, dressed in their gayest adornments. As the men approach close to the hut they separate, and the guardians deposit each his charge at the front of the fire. The youths then enter the hut, and the oldest woman, after eyeing her son all over, lightly strikes him twice with a boomerang.² It is an understood signal, at which all the novices immediately run from the camp back into the bush, followed closely by all the men.

The ceremonies are now completed, and the youths remain for a certain time, which is fixed by the old men, gaining their own living as best they can, by catching such food-animals as are not forbidden to them. The rules under which certain animals, birds, &c., are forbidden are such as these: the novice may not kill and eat—

(1) Any animal that burrows in the ground, for it recalls to mind the foot-holes where the tooth was knocked out; *e.g.*, the wombat.

(2) Such creatures as have very prominent teeth, for these recall the tooth itself.

(3) Any animal that climbs to the tree tops, for they are then near to *Darmūlūn*; *e.g.*, the native bear.

(4) Any bird that swims, for it recalls the final washing.

¹ At one great *Būnan*, held about fifteen years ago, the novices were forbidden, as one of them related to me, to reveal anything to "women, children, or white-fellows." In the *Kūringal* which I have just described, no promise was expected from me, as being already an initiated person, but I was earnestly entreated by one of the principal old men not to reveal any of the mysteries "to the *Kūmai*, who have no *Kūringal*, and who know nothing."

² With the *Wirajuri* the novice is struck by his mother with a bough.

(5) Nor, above all, the Emu, for this is *Ngalalbal*, the wife of *Daramūlūn*, and at the same time "the woman";¹ for the novice during his probation is not permitted even so much as to look at a woman, or to speak to one; and even for some time after he must cover his mouth with his rug when one is present. Yet on one occasion during his probation he is shown to his mother, in order that her mind may be at rest concerning him.²

These food rules are only relaxed by degrees by some old man giving the youth a portion of the forbidden animal, or rubbing him with its fat. In some of the tribes, *e.g.*, the Wolgal, these food rules only become relaxed gradually, so that it is the old man only who is free to use every kind of animal food.

During the time of probation the young men are under the charge of their guardians. But they are also visited and instructed by the old men. After a time, as the council of elders is satisfied that the youth is competent to take his place among the men, he is recalled and permitted to be present at the general councils, but he does not speak at them, or take any part other than a passive one.

After a still further period he is permitted to take the wife who has been assigned to him by the arrangement of his and her father, and in acquiring her he takes his sister (own or tribal), as an exchange—that is, as a wife for her own or tribal brother. These mutual exchanges are often arranged at a general meeting of all the people before the various contingents separate after the ceremonies are over.³ The extracted tooth is taken care of by one of the old men. It seems that there is no strict rule as to who shall first have charge of it, but in any case it is passed from one headman to another until it has made the complete circuit of the community, which

¹ The Wirajuri call the Emu "the food of *Baiamai*," and hence it is strictly forbidden to the novices.

² Among the Wirajuri the novices are brought in and set on a mound, on the other side of which are all the women. After being thus "shown to the women" in the character of men, they retire to the bush for probation.

³ Such arrangements are made, or at any rate originated, at a kind of "fair," which is frequently held just before the people all return to their homes after the *Bānos* ceremonies. At this "fair" people barter things with each other. These things have been made for this purpose, and carried with them. Weapons, rugs, articles of attire, and ornaments are thus exchanged, and it is at this time, as I have said, that matrimonial arrangements are made. For instance, the father of one of the novices may announce that he requires a wife for his boy. If some one present has a daughter suitable, the matter is discussed. But in very many cases a girl has been promised to a future husband when she was quite small, and when the future husband is not much older. Where disparity in age is occasioned by such betrothals, and indeed where the inclinations of the young people run contrary to the wishes of their parents, the difficulty is very frequently cut by elopement.

was present at the initiation. It then returns to the father of the youth, and finally to himself.¹

Thus the gap formed by the absence of the tooth is the visible sign of initiation. The tooth itself, together with the message accompanying it, makes known to all concerned that so-and-so has been made a man, and has thereby acquired all privileges which are attached to man's estate.

The object of the ceremonies.—It is quite clear that these ceremonies have for their object the conferring upon the youths of the tribe the privileges, duties, and obligations of manhood. The nature of the ceremonies, and several of the proceedings, clearly show this. At the same time that the youth is enrolled among the men he is removed from the maternal control. The ceremonies are intended also to create a gulf between the past life of the boy and the future life of the man, which can never be re-crossed. They are also intended to strengthen the authority of the elder men over the younger. Finally, the opportunity is taken of impressing upon the mind of the youth, in an indelible manner, those rules of conduct which form the moral law of the tribe. In addition to all this there is even a quasi-religious element which tends to strengthen very greatly the effect which the ceremonies are likely to have upon the mind of the youth. Taken as a whole I cannot imagine anything more calculated to impress, to awe, and even to terrify a young Australian savage than to pass through ceremonies such as those I have now briefly described.

Some interesting comparisons show themselves between the ceremonies which form the subject of this memoir and those of tribes standing further back in the social series. I take the Dieri tribe of South Australia as my example.² This tribe has two primary classes and a large group of totems under each, with uterine descent. The classes are strictly exogamic, and there is intermarriage, not only between the class-divisions of the Dieri, but also between them and the equivalent classes of kindred tribes, over a space of at least three hundred miles square. A boy at his birth acquires a marital right as regards those women of the other class-name who are not forbidden to him under the

¹ The Coast Murring fasten the tooth to a piece of the opossum fur cord of which the man's belt is made, with the gum of the grass tree. The Wolgal sometimes, instead of the above-named cord, use one made of the twisted fibre of a small bush or undershrub. The Wolgal also carry the tooth in a small bag with rattle and sometimes kangaroo teeth. But whatever mode of conveyance is adopted, the tooth must on no account whatever be placed in the bag which contains the magic substances. This, it is believed, would cause great danger to the owner of the tooth.

² Mr. S. Gason has communicated to me full and most interesting particulars as to the initiation ceremonies of this tribe, which he has himself participated in.

restrictions arising out of consanguinity; but this right cannot be lawfully exercised until he has been formally admitted to the ranks of the men by passing through several initiations. When he is duly qualified, the great council, on the occasion of the next occurring circumcision ceremony (which he has long before gone through), allots to him a woman of that class-name and totem with which his own has connubium. This woman may be, and probably has been, already allotted to one or more other men, who also themselves have been allotted to other women. This is the marital arrangement which has been called by Mr. Fison and myself that of "accessory husbands and wives."¹ It is at a still later period that a man acquires a "special wife." It is quite evident that in this tribe the exercise of the potential right which arises under the social organisation is controlled by the local organization, as represented by the Great Council of the tribe.

Some of the tribes which I have herein considered have uterine, and some have agnatic descent, but it is evident that in all of them the marital privilege which accompanies birth, and which is attached to the inherited name, is restrained until the local organisation has permitted it to be exercised.²

I now shortly summarise the conclusions following from a study of the initiation ceremonies:—

1. It is the local organisation which controls the initiation ceremonies.
2. The ceremonies confer the privileges, duties, and liabilities of manhood on the youths of the community.
3. Each epigamic moiety initiates the youths of the complementary moiety.
4. The knocking out of the tooth is the visible sign of the initiation of the individual.
5. The circuit in which the tooth is carried marks the extent of the epigamic community.

There are some other general conclusions which appear to me not to be without important significance.

The teachings of the initiation are in a series of "moral lessons" pantomimically displayed, in a manner intended to be so impressive as to be indelible. There is clearly a belief in a Great Spirit, or rather an anthropomorphic Supernatural Being, the "Master" of all, whose abode is above the sky, and to whom are attributed powers of omnipotence and omnipresence, or, at

¹ "From Mother-right to Father-right." (*"Journ. Anthropol. Inst."*, August, 1882.)

² In the Wiraijuri and Wolgal tribes, the totems are mostly epigamic—one totem of one class with one totem of the other class; but in the Wiraijuri case, at least, there are one or two totems which are privileged beyond their fellows in having connubium with two others of the corresponding class.

any rate, the power to "do anything and to go anywhere." The exhibition of his image to the novices, and the magic dances round it, approach very near to idol worship. The wizards who profess to communicate with him, and to be the mediums of communication between him and his tribe, are not far removed from an organised priesthood. To his direct ordinance are attributed the social and moral laws of the community. Although there is no worship of *Daramulân*, as, for instance, by prayer, yet there is clearly an invocation of him by name, and a belief that certain acts please while others displease him.

It has been said that the Australian savage is without any form of religion or religious beliefs. If religion is defined as being the formulated worship of a divinity, then these savages have no religion; but I venture to assert that it can no longer be maintained that they have no belief which can be called religious—that is, in the sense of beliefs which govern tribal and individual morality under a supernatural sanction.

DISCUSSION.

Mr. A. TILOR observed that the writer of this paper offered an excellent illustration of the action of heredity. He evidently owed his lucidity of expression, and interest in the details of life, to his father and mother, those excellent writers, William and Mary Howitt. The paper was singularly interesting, and, if the ceremonies and spiritualistic views were quite free from any white influence, Australian primitive life threw a strong light on the prehistoric races of Europe. The Greeks may have developed their theatre, their refined art of acting, from similar rude ceremonies. The Greek Chorus appeared to us a superfluity, but the Greeks may have merely used the Chorus because it was an essential part of the primitive ceremonial acting of their ancestors, and, if so, it had a real meaning. Then the Australian custom of burying a live man in a sham grave had its counterpart in the initiation ceremonies of the Gnostics, known to us because frequently engraved on gems in the first and second centuries, A.D.

JANUARY 8TH, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents received since the last meeting were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

- From W. WHITAKER, Esq., F.G.S.—The Constitution of Man considered in relation to external objects. By George Combe.
- From Dr. A. B. MEYER.—Zur Dippel-Sprache in Ost-Australien. By A. B. Meyer and M. Uhle.
- From the AUTHOR.—Suggestions on the Voice-formation of the Semitic Verb. By G. Bertin, M.R.A.S.
- A Sketch of the Modern Languages of Africa. By R. N. Cust.
- Sur les Copulæ intercostoïdales et les Némisternoïdes du Sacrum des Mammifères. By M. le Professeur Paul Albrecht.
- Sur la fente maxillaire double sous-muqueuse et les 4 os intermaxillaires de l'ornithorynque adulte normal. By M. le Professeur Paul Albrecht.
- Epiphyses osseuses sur les apophyses épineuses des vertèbres d'un reptile. By M. le Professeur Paul Albrecht.
- From the SECRETARY OF THE INTERIOR, U.S.A.—Annual Report of the Commissioner of Indian Affairs to the Secretary of the Interior. 1880, 1881, 1882.
- From the COLONIAL SECRETARY.—Statistics of the Colony of New Zealand for the year 1882.
- From Professor ALEX. AGASSIZ.—Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College. 1882-3.
- From the GEOGRAPHICAL SOCIETY OF LISBON.—La Question du Zaïre. By M. Luciano Cordeiro.
- Stanley's First Opinions. Portugal and the Slave Trade.
- From the NATIONAL ACADEMY OF SCIENCES AT CÓRDOBA.—Informe Oficial de la Comisión Científica Agregada al Estado Mayor General de la Expedición al Rio Negro. Ent: 1, 2, 3.
- From the BERLIN ANTHROPOLOGICAL SOCIETY.—Zeitschrift für Ethnologie, 1883. Heft. 5.
- From the ACADEMY.—Oversigt over det Kongelige Danske Videnskabernes Selskabs, 1883. No. 2.
- Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg. Tom. XXVIII, No: 4.
- Boletín de la Academia Nacional de Ciencias en Córdoba. Tom. V, Entrega 1, 2.
- Actas de la Academia Nacional de Ciencias en Córdoba. Tom. IV, Entrega 1.
- From the ASSOCIATION.—Proceedings of the Geologists' Association. Vol. VIII, No. 2. July, 1883.
- From the INSTITUTE.—Proceedings of the Canadian Institute. Vol. 1, No. 3.
- From the SOCIETY.—Proceedings of the Society of Antiquaries of Scotland. Vol. XVI.
- Atti della Società Italiana di Scienze Naturali. Vol. XXIV, Fas. 1-4; Vol. XXV, 1, 2.



FIG. 1.



FIG. 2.

From the SOCIETY.—Bulletin de la Société des Sciences Naturelles de Neuchâtel. Tom. XIII.

— Boletim da Sociedade de Geographia de Lisboa. 4^a Ser., Nos. 2, 3.

— Journal of the Society of Arts. Nos. 1621-1623.

— Proceedings of the Asiatic Society of Bengal, 1883. Nos. 7, 8.

From the EDITOR.—Journal of Mental Science. No. 92.

— American Antiquaries. Vol. V, No. 4. October, 1883.

— Bulletino di Paletnologia Italiana, 1883. Nos. 8, 9, e 10.

— Australasian Medical Gazette. Vol. III, Nos. 1-25.

— "Science." Nos. 43-48.

— "Nature." Nos. 737-739.

— Revue Scientifique. Tom. XXXII, Nos. 24-26.

— Revue Politique. Tom. XXXII, Nos. 24-26.

The election of the following new members was announced:—
The Rev. EDWARD L. DEWICK, M.A., F.G.S., ALEXANDER MACALISTER, Esq., M.D., F.R.S., and OLDFIELD THOMAS, Esq., as Ordinary Members; Dr. E.-T. HANY and Dr. HERMANN WELCKER as Honorary Members; and LUCIEN CARR, Esq., and Dr. A. B. MEYER as Corresponding Members.

The following paper was read by the author, and illustrated by specimens of ethnological interest:—

On the RACES of the CONGO and the PORTUGUESE COLONIES in WESTERN AFRICA. By H. H. JOHNSTON, Esq., F.Z.S., F.R.G.S.

[WITH PLATES XXVIII AND XXIX.]

WESTERN Tropical Africa, between Senegambia in the north and the river Kunéné to the south, offers a vast studying-ground to the anthropologist, wherein types of nearly every well-marked African race may be observed. In the north, bordering the river Senegal, there are the Berbers of the Sahara, the interesting Fulah peoples, the Woloffs and the Atlantic negroes, the debased Papeis, the sturdy Kru-men, the swarming populations of the Gold Coast and the Niger estuary. Then, rounding the Cameroon Mountains, we begin to enter the far-spreading domain of the Bantu peoples, linguistically if not racially extending to Fernando Po and the Cross River.

On reaching the Congo regions, the type of native man is no longer what we know as the true negro (although in parenthesis I might remark that it is difficult to say what the "true negro" is), and we find ourselves here among peoples that are really "Bantu" in physical characteristics as well as in tongue. This

race holds the coast uninterruptedly till we have passed an obscure river called the Croque, forty miles to the south of Mossâmedes, where the local tribes, the *Ba-Koroka*, or *Ba-Kroka*, begin to betray by divers signs the admixture of Hottentot influence. Farther south still, on the limit of this studying-ground, there are wandering tribes of Hottentots about the dreary desert-region of the lower course of the Kunéné, and some distance further inland are outlying offshoots of the congeries of Bushman tribes which inhabit the little known territories between the Kunéné and the Upper Zambesi, dotted in little patches among the intermingling peoples of Bantu stock. As I have encountered stray specimens of these Bushmans north of the Kunéné, they may be included in my catalogue of the races met with in the Portuguese colonies of West Africa, and as they are usually reputed to be among the lowest types of man, they may appropriately begin the list.

The *Bushmans* with whom I had come into personal contact were among the camp-followers of a great Swedish hunter, Ericksen, with whom I journeyed for nearly 300 miles, and I thus had an opportunity of closely examining two individuals among them who were more amenable to research than the others.

No. 1 was a youth or young man, whose age it was only possible to guess at, but who had entered the age of puberty. He measured just 5 feet in height. His colour was a tawny yellow, probably darkened by dirt. The hair on the head was arranged in little compact and apparently separate patches—*floconné* as the French call it. There was no hair visible at the armpits, nor anywhere on the body and limbs. Akrah, as he was called, had small and delicately shaped hands and feet, and was generally well proportioned. The legs were straight and the shanks unbowed, but the calf was high and scanty. Akrah evinced considerable aptitude, and was indeed really intelligent and bright in manner, quickly comprehending the drift of questions addressed to him. In the course of the year or two which he had spent with the white and Bastard hunters, ranging between Damará Land and Mossâmedes, in two wanderings he had acquired a really astonishing grasp of many diverse and intricate tongues. He conversed fluently in Dutch, spoke more English than many of the Boers, knew something of Portuguese, and was thoroughly conversant with Hottentot, Ochi-herrero, Ochi-mpo, and the dialects of many Bantu tribes in the basin of the Kunéné.

Bushman No. 2 was a queer-looking little creature, who had been for some years the sort of slave or follower of a Transvaal Boer, who had found him half starving in some

"veldt" on the Okavango River—I think the Okhi-mboro "veldt"—and who had adopted him half as plaything and half as a slave: he performed all sorts of useful services in tracking game and tending oxen. This specimen differed somewhat in type from Akrab, although I believe their languages were mutually intelligible. Bushman No. 2 was very short, measuring only 4 feet 7 inches. He was, according to his master's account, sixteen years of age, but this was a matter of great uncertainty. This curious little creature was light-yellow in colour, with scanty hair on the head and no hair whatever on the body. I might mention that no Bushman I have ever seen had the slightest vestige of a beard or moustache. I do not know whether hair on the face or body is pulled out when it makes its appearance, as occurs with so many negro and Bantu tribes. In this second Bushman the nose was so extraordinarily flattened that in profile it scarcely appeared. The brow was *bombé* and projecting, the frontal ridge nearly absent. The mouth was wide, and the teeth, which were white and large, slightly protruded from the thick and out-turned lips. The chin was very retreating and the most prominent features in the head were the great bulging forehead, the projecting cheek-bones, and the massive jaw. The eyes were long and narrow, and the ears small and sticking forward. This specimen had not the well-shaped figure of Akrab, the other Bushman. His hands and feet were small, but he had a great pot-belly, and his lower limbs were puny and inclined to be bowed. He was sullen and shy, although he had the same wonderful faculty for speaking foreign languages as the Bushman I have previously described. I might mention, before finishing this scanty description, that all the five or six specimens of this race whom I encountered in South-West Africa exhibited a mental ability that was strangely at variance with their low physical characteristics.

The *Hottentots* are not only represented by various wild and wandering tribes about the Lower Kunéné, but, stranger still, have actually, in a civilised or half-civilised and Christianised form, invaded, within the last fifteen months, the Portuguese district of Mossâmedes. After the bloody war between the Damáras and the Namaqua *Hottentots*, some tribes of the latter, fleeing before their Ova-herrero pursuers, wandered to the Kunéné, and, crossing that boundary river, entered Portuguese territory to the number of several thousands, and from being panic-stricken fugitives, assumed a somewhat aggressive attitude towards the unwarlike tribes among whom they found themselves, and who regarded the arrival of their well-armed, well-mounted invaders with considerable apprehension. Not only the natives but the Portuguese themselves were much concerned at this unlooked-for

and uninvited incursion of undesirable colonists. However, I believe the matter was peaceably arranged, and the Hottentots settled down quietly into the lands accorded them. I remember when the Governor of Mossâmedes was expressing his fears to Mr. Eriksen of the possibility of future complications arising from the incompatibility of this restless, quarrelsome people with the quiet, timid inhabitants of the Portuguese province, the latter said simply, "Give them a few rainy seasons and they will all die out." These Hottentots suffer from fever to a terrible degree when they enter the rainy countries beyond their native desert. They are besides literally eaten up with disease, and all agree in saying that they are a doomed race. The Hottentot is a much finer man than the Bushman, as regards height and build. The morals of this race are very lax, but wherever Christianity has made any way it has materially improved their tone and done much to dissipate the immorality. I only speak of them as I have found them, and have no intention of judging the whole race by the few border tribes migrating to the north.

Several other peoples, of which examples find their way from time to time to the Kunéné, are interesting; such as the Hill-Damárás, or Schijt Damárás, of the Boers, a race apparently closely allied in origin to the Ova-mpo, and thoroughly Bantu in feature, but speaking an apparently Hottentot tongue with four clicks. The Ova-mpo themselves are a fine race. The men are often 6 feet and occasionally 6 feet 1 inch and 6 feet 2 inches in height, with fine features and bushy heads of hair. Their bodies, when not artificially depilated, are also hairy, being covered with thickly curling pile on the chest, back, pubic region, and thighs.

The thriving tribe of the Ma-humbi, or Ova-humbi, are apparently a branch of this race, and the language, which is again closely related to Ochi-herrero, is practically identical with *Ochi-mpo*.

Proceeding northwards along the Caculovari river we come across many tribes of Bantu race, slightly diverging in language from the Ova-mpo of the Kunéné, and approaching the Bunda groups. There are along this tributary of the Kunéné the Ba-Gambus and the Ba-hai; while westward, across the Shella Mountains, are the almost unknown Ova-Chavikwa tribes, from the character of their plural prefix probably related in origin to the Ova-mpo and Ova-herrero groups. To the east of the Caculovari are scattered tribes of Bushmans, called Kaukala. Further north still, passing the somewhat savage race of Jan to the right, we come to the high plateau of Huilla and Humpata,¹

¹ As these are now Portuguese towns I give the Portuguese orthography. The phonetic spelling is *Wila* and *Mpôla*.

inhabited by tractable, thrifty people, taking kindly to Portuguese dominion.

The western slopes of the Shella Mountains, as far south as Capangombe (lat. 15° S.) are peopled by the Mu-ndombes, as the Portuguese call them, or more correctly by the A-ndombe, a sturdy race of carriers, which extends as far north as Benguela. The A-ndombe seem to have satisfactorily solved the problem of the status of woman, to the woman's entire satisfaction. She is constituted carrier, labourer, and hard-worker in general, and this energetic life has so strengthened her muscular system that the women are in many cases stronger and finer than the men. Some of them have really splendid figures, with well-formed busts, but, unfortunately, they are rendered insupportable by their most offensive smell, for among the Mu-ndombes the lady has the exclusive privilege of anointing herself with the aristocratic pomade of the country, a mixture of rancid butter and disagreeably smelling herbs. With this she smears her body, and with this is saturated the horrible rag, which has descended unwashed from her great-great-grandmother, that is used to scantily envelop her stout frame. The men, however, who cannot indulge in such luxuries, and must perforce content themselves with water for prophylactory purposes, are much pleasanter persons to deal with.

About Mossamedes the very few native inhabitants belong to the Nano group, which finds its centre more towards Benguela. South of Mossamedes, however, we have the Ba-Koroka, on and about the river Koroka. This tribe is said to be divided into two linguistic groups, one of which speaks a pure Bantu dialect, and the other exhibits considerable Hottentot influence; and it is even averred by the Portuguese that they have two clicks in their tongue. The individuals of the Ba-Koroka that I personally examined were fine tall men, scantily dressed or not clothed at all, but wearing a great profusion of white shell necklaces and leather bands and rings made of cattle hide. They had abundant and fairly long hair, like the Ova-mpo, and an approach to whiskers and beard; with thick curly hair on parts of the body. The only suggestion of a Hottentot intermixture in certain individuals was the presence of wide and prominent cheek-bones and the depressed, wide nose.

Farther inland, the Ba-Kubaës, restless robber tribes, inhabit the slopes of the Shella Mountains, to the south of the Mu-ndombe tribe. Beyond the Nano country, to the north, are many tribes too numerous to catalogue, and impossible to describe in detail on the present occasion. Foremost among them are the fine-looking Ba-ilundo, the Ki-sam, and the Li-bollo. Between Benguela and the river Quanza, the Portuguese rule nowhere

extends farther than the coast, and the interior of this tract of country has been little explored. On the north bank of the great Quanza begin the A-bunda peoples, which extend northward to the eighth parallel, and westward to the Quango. They are a remarkably smart and intelligent race, and take very kindly to Portuguese rule. At Dondo, a populous town on the Quanza, just below the falls there are great opportunities for studying types of Bantu people. You have here arrivals from Kassanji and the Quango basin; amongst them specimens of the turbulent Ba-ngala, who wear strange monkey-skin caps, made from the skin of a *Colobus* monkey, with long black and white hair. It is a curious coincidence that the same monkey-skin caps are worn by the natives on the Upper Congo, and also that there is a well-known race on that river called Ba-ngala. At Dondo, besides the Ba-ngala there are occasional specimens of Ba-lunda, of the natives of the Muata Ya-noo's kingdom, and of races more remotely placed in the interior of Africa, together with representatives of all the principal tribes of northern Angola.

About 7° 40' S. lat. on the coast, and about 7° in the interior, the intermingling of the Congo races begins, so that before we enter upon this fresh field of study I will just briefly pass in review certain points of interest in the South-West African races.

As regards the domestic animals and cultivated plants, it will be observed that as we proceed from south to north, the cattle, which are kept in vast herds by the Ova-herrero and the Ovampo, become less and less the principal wealth of the people, until, arriving on the confines of the Congo races, we notice that the ox, to all intents and purposes, dies out as a domestic animal, those few on the lower Congo, or belonging to the King of São Salvador, having been introduced by the Portuguese. The cause of this is, apparently, that on entering the moister regions of Western Africa, certain poisonous herbs appear, which kill the cattle. Certainly for some reason, in most places on the Congo, or in the Loango country, oxen dwindle and die, and we do not meet with them again amongst the natives of Western Africa till we arrive at the Niger region. There appear to be two races of oxen mingling on the Kunéné. There is the Damará ox, similar to the South African breeds in general aspect, a large beast often parti-coloured, with extremely long horns, and a straight back; then a second type resembling certain Asiatic and East African—and, for the matter of that, ancient Egyptian—cattle, a smaller ox, of uniform colour, either fawn, dun, or black, or even white, with shortish horns, a large hump, and a broad dewlap, the whole creature closely resembling, and being undoubtedly akin to, the Indian zebu. The first-

described variety of ox, long-horned and straight-backed, is the prevailing type throughout Angola, and it is from this breed that the famous riding oxen, or *boi-cavallos*, of the Portuguese are obtained. The humped kind of cattle keeps much more to Central Africa, appears on the Kunéné and on the Upper Quanza, and, oddly enough, occasionally appears on the Lower Congo, brought from the interior, either as a curiosity or as a present to trading chiefs.

The sheep of the Kunéné are also of two separate and entirely distinct breeds, the Central African and the South African: the latter being the great Cape sheep with a dewlap, tall in the legs, and with drooping ears; the former a more beautiful kind, hairy, like all African domestic sheep, but possessing an abundant mane of silky hair, stretching from the chin to the belly. Both sheep may be hornless, or may produce individuals with large horns. The Cape sheep is generally brown and fawn colour; the Central African pure white or pied black and white, or occasionally quite black.

The goats are of a good-sized breed, offering great peculiarities. They are not so abundant, or so generally kept in South-West Africa as on the Congo. The domestic fowl is of course universally kept, even by certain tribes of Bushmans who keep little else. It is small and mongrel. The Muscovy duck has penetrated from the coast, but is still considered a curiosity by the chiefs of the interior. Pigeons are unknown by the uncivilised nations as domestic pets; while, to sum up the list that the pig ought to have headed, I may mention that this useful scavenger is everywhere kept by the natives.

Among cultivated plants, maize is widely cultivated. In many localities its native name betrays a similarity with the word "maize," though the latter is of Spanish and not Portuguese origin. That the Zulus received the Indian corn from the Portuguese seems probable, as the Zulu name "mealy" resembles the Portuguese word *milho*, applied to maize. The sugarcane is only met with in Northern Angola, where it has been originally introduced by the Portuguese. Rice is cultivated in Bihé and on the Quango, whither it has slowly journeyed across Africa from the East Coast. Manioc, tobacco, the sweet potato, the ground-nut, and certain cucurbitaceæ are widely known and reared in constant crops. Palm wine is unknown south of the Quanza, although a *Hyphæne* palm grows abundantly in the basin of the Kunéné. The only intoxicating drink seems to be a kind of sour beer, made from the maize and called "Makan." Aguardente is also made from the sugarcane in the more settled districts.

One reason for the easy spread of Portuguese power is the

absence of any great chiefdom or despotism amongst the natives. The Soba of Humbi is perhaps the most important chief south of the Quanza, and west of the Oku-vangu. He rules over about 80,000 subjects despotically, but permits a Portuguese chief and a garrison of four Portuguese soldiers in his midst.

The religion of the Bantu tribes in all this district between the Quanza and the Kunéné is also negative. About the Quanza there are medicine-men, and a belief in witchcraft prevails; but not in any degree like we met with it on the Loango coast. Farther south I have failed to detect any trace of religion at all, beyond a wavering fancy that the spirits of the dead return after death. Medicine-men or rain doctors I have failed to discover among the Kunéné tribes. I do not say that they may not exist, but they never appear to be different from ordinary individuals. There is no sign of cruel rites or human sacrifices. The natives seem to dislike the shedding of blood, and impose small fines for offences against individuals or the tribe. They are fond of music, and play on long drums, on a kind of rude five-stringed lyre, or on the marimba, an instrument made of thin keys of metal, placed over a sounding-board. Personal adornment is not sought after to any great extent. Cicatrification is practically absent. Occasionally white and other pigments are used to decorate the face or body with simple patterns generally following the contours. The general type of dwelling is a round hut, built of clay or wattled, with a peaked thatch roof. The round house or hut seems to go no further north than the southern bank of the Quanza, where it is replaced by the rectilinear, oblong building made of matting, interwoven palm-leaves, wooden posts, and dried grass.

Leaving the Portuguese possessions at Ambriz and journeying northwards we speedily notice a difference in the dialects spoken and in the appearance of the villages, in the manners and customs, and even looks of the natives. We are entering the Congo district, which, roughly speaking, extends northwards to the Ogowé, and westwards to the junction of the Great Mobindu (the Kassai, or erroneously named Ikelemba of Stanley) with the main stream of the Congo. South of the Lower Congo is the domain of the Ba-kongo proper, who may be said to extend far beyond the kingdom of that name, now sunk to the district round São Salvador, and to almost reach as far as Stanley Pool on the north and Duque de Bragança on the south, interiorwards, and from the mouth of the Congo to Ambriz, in the extremity of Portuguese dominion on the coast. The Ba-kongo speak the language known as Kongo, or Shi-kongo. They are divided into many tribes, speaking somewhat varying dialects. On the north bank of the Congo are the Ka-kongo or Ka-binda peoples,

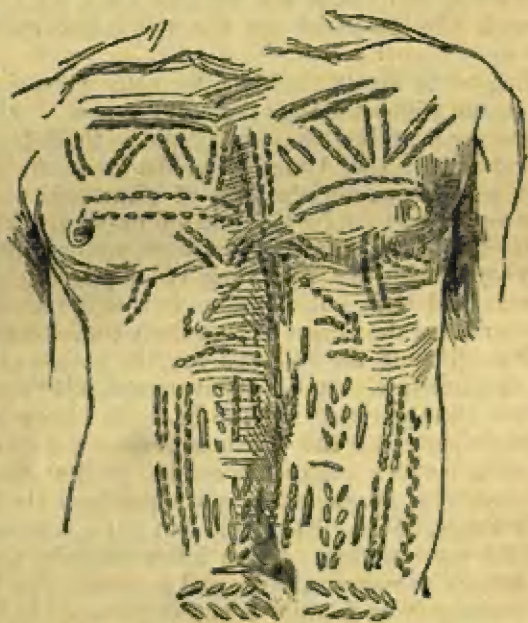
who extend along the river as far as Isangila, where they give place to the Ba-sundi and Ba-bwende. Arriving at Stanley Pool we find a decided change in the inhabitants. The great Ba-téké tribe first make their appearance here. They are comparatively recent immigrants into the Congo valley, and as yet do not extend beyond its southern banks. They come originally from the high plateaux which form the watershed of the Ogowé, and the north-western affluents of the Congo, and have advanced towards the Congo in a southward direction. Their headquarters may be said to be the residence and town of a great Ba-téké chief, at present Mpumo-Ntaba, the successor of De Brazza's Mákoko. Along the Congo the Ba-téké often form alternate colonies with the Ba-yansi, for the two races overlap one another.

Ascending to the Wa-buma River, we come upon the tribe of the same name which inhabits the lower waters of that great river. They are doubtless the same people as the A-brina found by De Brazza near the Alima. The Wa-buma are a gentle, inoffensive race, living on the best of terms with their more intelligent neighbours the Ba-téké and the Ba-yansi. This latter race is the most highly developed I have yet met with on the Congo. They inhabit the river from the Equator to the Wa-buma, but extend their colonies even farther down. They are the great carriers of the Congo, and regularly traffic between their equatorial neighbours, the Ba-ngālā, and the people of Stanley Pool, who in their turn carry on the ivory and other products to São Salvador and the coast. Of the Ba-ngālā I know but little, but imagine them, from the accounts of Ba-yansi traders, and from information which has recently reached me from Mr. Stanley, to differ greatly in language and physique from the Ba-yansi and Lower Congo tribes. They hold but little communication with the Ba-yansi traders. These latter describe their commercial relations as very suspicious and hurried. The Ba-ngālā place the tusks of ivory for sale in one canoe and the Ba-yansi the equivalent in cloth, beads, and guns in another. An exchange is then effected in mid-river, and the Ba-yansi return homewards, being never allowed to land. The Ba-ngālā are very much given to cicatrisation. The only individual of that race I have ever seen had his body covered with an intricate pattern of scars, (see woodcut, p. 470). He was a fine burly man, but desperately shy, and refused to give any words of his language. He was, I believe, a slave employed in trading amongst the Ba-yansi.

Besides the tribes catalogued there are others further in the interior, of which I can only record the names—the Ba-nunn, the Wa-buno, the Ba-kamba. The Ba-nunn are found to the south of the Ba-yansi, between the Congo and Lake Léopold II.

The Wa-buno seem to occupy the borderland to the south of Stanley Pool, between the Ba-téké and the Ba-kongo, and the Ba-kamba extend to the south of the Congo beyond the Ba-sundi.

In giving a somewhat more detailed description of the Congo tribes, I will commence with those of the lower river. Below Stanley Pool, and approaching the coast, the tribes begin to lose the distinctive physical characters that are typical of pure Bantu races, either through the degradation the coast climate seems to entail, or because they originally met and mixed with, on the low-lying coast-lands, an earlier negro population. This latter supposition sometimes strikes me as being the true one, because



TORSO OF A MALE OF THE BA-NGALA RACE, SHOWING CICATRISATION.

in such a littoral tribe as the Ka-binda or Loango people there are distinctly two types of race. One, the Bantu, a fine, tall, upright man, with delicately small hands and well-shaped feet, a fine face, high thin nose, beard, moustache, and a plentiful crop of hair; the other an ill-shaped, loosely-made figure, with splay feet, high calves, a retreating chin, blubber lips, no hair about the face, and the wool on his head close and crisply curled. These two distinct types may be met with side by side among the Ka-bindas, who, I might further mention, are the Kru-men

of the south, hiring themselves out in all directions as servants, sailors, labourers, and affecting more particularly the Portuguese colonies, which they overrun so far as Mossâmedes, invariably returning home after a time to spend their earnings. The Mushi-rongos, or, more properly, Ba-shi-kongo, are an ugly and degraded tribe, inhabiting the southern bank of the Congo as far as Noki, and extending down the coast nearly to Ambrizète. They come little into contact with the whites, and are savage and suspicious, preventing, as far as possible, all exploration of their country. Then we arrive at the great Ba-kongo proper, the once ruling race of this lower part of the river, whose king or emperor still lingers on at São Salvador.

The native villages on the Lower Congo, especially in the Cataract region between Vivi and Stanley Pool, are of a prosperous and comfortable appearance, suggesting here and there by certain cunning shifts and contrivances that their inhabitants are not bereft of *savoir vivre*. There are well-cultured plots of maize and cassada, here and there a lime, and even an orange tree (the latter rare), with papaw trees; and the beautiful passion-flower, which gives the fruit known as *maracujá*, or *grenadilla*, is carefully trained over a framework of sticks. Little plots of ground are assiduously hoed, and are marked out with geometrical accuracy by means of the same device as our gardeners employ at home—a tight string tied from peg to peg. There are clucking fowls with small chicks about them, carefully housed in large hencoops made of withes and grass, to protect the chickens from their many enemies. In a rough sort of shanty, constructed principally of overlaid palm-fronds, the goats and sheep are kept, and even, rarely, one may see a black, high-shouldered bullock stalled in a not ill-fashioned manger of the same material.

The houses are well and neatly built, generally raised a foot above the ground on a platform of beaten earth. There is first of all a framework of stout poles, one very long pole forming the apex of the slanting and wide-spreading roof, and in this is fixed a covering of thin laths and dried grass. The roof extends some feet beyond the body of the house, and in front is prolonged to a sort of verandah, further supported by two extra poles, and susceptible of any modification, from being the shady space of a few feet, where the inmates of the house pass most of their time, to becoming the great reception place and palaver-ground of chiefs. Here the inhabitants of each house are nearly always assembled. The women, perhaps pounding palm-kernels, or preparing other forms of food, sit round the doorway on grass mats, while the men, squatted in lazy ease, smoke their large-bowled pipes, whittle sticks with their knives, or prepare their

weapons for the chase, while in and out of the groups of adults merry little children, with large heads and large stomachs, play at the innocent games common to all child-kind.

Around each village there will be a grove of bananas or plantains, a perpetual source of food supply to their cultivators. Among other items of vegetable food are pumpkins, sweet potatoes, ground-nuts, and the all-important manioc, or cassada. Palm wine is largely drunk, and is generally obtained from *Elaeis guineensis*. Pine-apples, where they grow wild, are eaten, but the natives seem to have no idea of cultivating this delicious fruit. Their diet is almost entirely vegetable. They rarely eat their fowls, and think eggs and goat's milk unfit for food.

The natives of the Lower Congo are very superstitious, and for every person that dies somebody is made *ndokki* (or "devil possessed") and has to take the *casea* poison, a decoction of the bark of a large tree, *Erythrophloeum guineensis*. This is usually administered in such a way as to be merely a strong emetic, under the idea that the victim may "bring up" the devil and cast him out with his bile. They are also remarkable for initiation ceremonies, of a kind often met with in Africa, but never assuming quite the same character. "*Inkimba*" is the name given to the males who participate in these rites, which consist of the performance of circumcision; and in all probability the initiation into a kind of phallic worship, taught solely to men. The *Inkimba*, who may be of any age, boys of fourteen or men of forty, also form a sort of freemasonry, which possesses certain pass-words or signs. For one native year (six months) the ceremonies last, and there are three or more stages of initiation, said to be marked by changes in the curious grass aprons which the novitiates wear. These are either hung from the waist or supplementary fringes bring up the covering to the shoulders. The shape of this kind of grass petticoat resembles the old crinoline, and sticks out for some distance round the limbs, rendering the lower portion of the body quite invisible. The *Inkimba* chalk themselves all over a ghastly white with some argillaceous earth, and do not wash once during their six months' probation, though they often renew the white colouring. They are taught a different language by the *nganga*, or medicine-man, which language appears to be quite different from the ordinary tongue, and is never taught to females. During the whole period of their initiation they are sustained at the common expense of the village or community. When the *Inkimba* are on the road they announce their coming by a sort of drumming noise; then all who have not been initiated into their mysteries must clear out of the road. They renew their hideous white colour every few weeks, and it is a great ceremony with them.

No one has yet been able to examine into their sacred tongue. I have heard them conversing in it, and though quite unlike the ordinary dialect of the country it seems to have the regular prefixes. Might it not be some original and more archaic form of Bantu language, conserved for religious purposes, like the Sanscrit, the old Slavonic, and the Latin?

The *Inkimba* also receive a new name when they pass through the mysteries, and it is a great offence to call a man by the name of his childhood only, though one may join it to his new name for purposes of identification. Finally, I might mention that these *Inkimba* are found among the tribes as far up the Congo as Isangila, not quite 200 miles from the sea; also along the Ka-binda and Loango coast to the north, and down into Angola on the south. The same idea, though not taking quite the same form, is present not only among the Bantu peoples and the negroes, but also among the Papuans and other races of Melanesia, to judge by the description of Mr. Wilfrid Powell and other travellers in those regions.

Farther up the river, especially about Manyanga, divers new customs and religious forms make their appearance. Thus, amongst the Ba-sundi and Ba-bwende, many youths are mutilated in order to more fittingly offer themselves to the phallic worship, which increasingly prevails as we advance from the coast to the interior. At certain villages between Manyanga and Isangila there are curious eunuch dances to celebrate the new moon, in which a white cock is thrown up into the air alive, with clipped wings, and as it falls towards the ground it is caught and plucked by the eunuchs. I was told that originally this used to be a human sacrifice, and that a young boy or girl was thrown up into the air and torn to pieces by the eunuchs as he or she fell, but that of late years slaves had got scarce or manners milder, and a white cock was now substituted. At a village near the great falls of Ntombo Mataka, a little above Manyanga, there is a kind of rustic temple containing some very extraordinary carved wooden figures, four in number, life size, and exhibiting a really surprising amount of imitative skill in their sculpture, and coloured. This strange temple, which is not the only one in the neighbourhood, was first discovered by Lieutenant Nilis, the Commander of Manyanga Station, who drew my attention to it.

Probably nowhere is the Phallus so openly and universally worshipped as about Stanley Pool. In the forests there are strange temples of thatch and wood containing the phallic symbol. This worship is, as far as I know, conducted without any really obscene ceremonies, and is a subject of simple reverence in the natives' eyes.

A Congo market is an interesting sight to see. It is generally

held every four or every eight days, either "weekly" or "fortnightly," for the native week is of four days only. The natives will often come a hundred miles to attend one of these big markets, and there are generally several *thousands* present buying and selling. The din of voices may be heard afar off, and when you enter the great open square, where, under the shade of great trees, perhaps a thousand people are disposed in little chattering groups round their heaps of wares, it is worse than the parrot-house at the Zoological Gardens. The women are the keenest traders. They haggle and scream and expostulate and chuckle aside over their bargains, whilst the hulking men lounge about in good-humoured listlessness, or squat in rows stolidly smoking. Although the strife of tongues is great, few real quarrels occur. There is in most cases a chief of the market, perhaps an old Fetich-man, who regulates all disputes, and who so heavily fines both litigants that all are chary of provoking his arbitration.

The physique and intellectual capacities of the Congo peoples improve in proportion as we advance into the interior. The Ba-kongo are superior to the tribes of the littoral, and the Ba-téké of Stanley Pool far surpass the Ba-kongo in physical development and indigenous civilisation, while they in their turn are inferior in both to the Ba-yansi beyond. Whether the Ba-ngālā and other remote tribes along the Upper Congo are still finer in physique, and still more civilised, remains to be shown, and probably Mr. Stanley will soon be able to tell us.

The Ba-téké distinguish themselves by five striated marks or scars drawn across each cheek. They are, like the Ba-yansi, a hairy race naturally, but all the body-hair is pulled out carefully and absolute nakedness cultivated. They also pull out with pincers every hair in the eyebrows and every eyelash. The beard and moustache are frequently allowed to grow, but in certain tribes the privilege of wearing them is confined to the chief. The Ba-yansi are a splendid race as regards the development and grace of their forms, and two points about them contrast very favourably with most of the coast races, namely, their lighter colour—generally a warm chocolate—and their freedom from that offensive smell which is supposed, wrongly, to characterise most Africans. Many other details show their comparatively high status: their small hands and feet, their well-shaped legs with full calves, and their abundant heads of hair. Though the hair is still curly and crisp, it often becomes quite long, and is twisted and tortured into all sorts of fantastic "coiffures." The men wear it in horns, either on the top of the head or in pig-tails, or depending on each side of their cheeks, also in a sort of chignon. The women sometimes just frizz it up round their heads, or comb it out smoothly and strain it over pads, or

they will plait it into an infinitude of little rats' tails, which from their stiffness stand up all round the head in a bristling manner.

A red dye, which is got from the bark of a tree called scientifically *Baphia nitida*, is used to a great extent for colouring their nails, and often their bodies and clothes, with a warm tinge of maroon. They further decorate themselves with white, yellow, and black patterns, made respectively with calcareous earth, yellow-ochre, and burnt wood. They also disfigure themselves, like many Congo tribes, with eccentric patterns on the skin of raised wheals or lumps, made by means of slight incisions in the flesh, into which some irritant is rubbed.

With the Ba-yansi, Ba-téké, and Wa-buma, circumcision is in vogue, but it is performed without any special ceremonies, and usually at the age of twelve days.

The Ba-yansi and Ba-téké have few signs of any religion. They believe more or less in witchcraft, although I never detected any signs of the poison-water ideal, and they have a firm belief in a shadowy life after the grave, where everything is a pale copy of this present existence. At the death of a great chief four or five slaves are killed, that their souls may accompany him; and into the graves of all people of consequence—of all, in short, except slaves, who when dead are thrown to the crocodiles—are put bales of cloth, plates, beads, knives, and other articles requisite for beginning life afresh after this mortal coil is cast off. By a touching extension of symbolism, the plates are broken, the beads are crushed, and the knives are bent to *kill* them, so that they too may “die” and go to the spirit-land.

The Ba-yansi believe in a shadowy god whom they call *Ikuru*, which means “the sky.” Among many Bantu tribes, the names for god and sun are, if not identical, derived from the same source.

The Ba-yansi have a decided indigenous civilisation of their own. Their houses are large and fairly high, and divided into three or more rooms, the floor often being covered with clean matting, and the door, made of laths and matting, can be swung backwards and forwards on a rude hinge. Their pottery, their weaving, their wonderful power of artistic decoration, their metal work in iron and copper, their attempts at husbandry, and their contrivances for fishing and bird-trapping all show a great advance on the tribes of the lower river.

A few words as to their domestic animals may be of interest. The ox is unknown, and his old classical Bantu name *ngombu* or *ngombe* is applied in the Ba-yansi tongue to the buffalo. The domestic pig is largely kept by the Congo peoples. I do not agree with the opinion of those who surmise that the pig was

originally introduced into West Africa and the Congo regions by the Portuguese. The pig, in a domestic state, extends among the Bantu races right across Africa, and everywhere possesses a similar name. The pig in Ki-yansi is called *ngũlũ*, and in the Ki-swahili of Zanzibar is known as *ngurũwẽ* or *ngũlawe*. It is a black, bristly, high-shouldered beast, very like the Irish greyhound pig. Like most African domestic animals it probably had an Asiatic origin. The sheep is rarely met with beyond Stanley Pool, still it is known and named. It belongs to the Central African type—a hairy sheep with small horns, and a magnificent mane in the ram, which extends from the chin to the stomach, and greatly resembles the same appendage in the aoudad, or wild sheep of Northern Africa. I do not believe, however, that this domestic sheep of Central Africa had its origin in this *mouflon à manchettes* of Algeria. On the contrary, the ewe, which has no mane, and the young maneless rams exactly resemble certain breeds of Persian sheep, like which they are pied black and white in colour. The goat of the Congo is a little, compactly-built animal, short on the legs and very fat. The females make excellent milch goats, and their milk is a most delicious and wholesome addition to one's diet. The general type of dog on the Upper Congo (on the lower river it is much mixed with European races introduced by the Portuguese) is simply our old friend the pariah dog of India and the East over again, with a look of the dingo and the wild dog of Sumatra superadded. It has a foxy head, prick ears, a smooth fawn-coloured coat, and a tail slightly inclined to be bushy, and is to my thinking a very pretty creature. They have one admirable point in their character in that they never bark, giving vent only when very much moved to a long wail or howl. They are considered very dainty eating by the natives, and are, indeed, such a luxury that by an unwritten law only the superior sex, the men, are allowed to partake of roasted dog. The cats on the Congo are lean, long-legged, and ugly, and offer every diversity of colour and marking. Tabbies, however, are the most commonly seen. These cats are splendid mousers, or rather ratters, and help to rid the native villages of the small black rats which infest them.

Pigeons are unknown in a domestic state. The fowl is small and mongrel-like. It is, however, very productive. Its name everywhere on the Congo is *susu*, a word akin in origin to the *kuku* and *chuchu* of the East Coast.

Finally, there exists here and there the Muscovy duck, a bird introduced into Western Africa from Brazil by the Portuguese during the seventeenth century. It is slowly spreading up the Congo, where it may eventually meet the specimens introduced into Eastern Africa by the same people. The natives of the

Congo also owe to the Portuguese the manioc root, which they largely cultivate for food, the sweet potato, Indian corn, pine-apples, ground-nuts, the sugar-cane, oranges, and limes, all of which, with the exception of the sugar-cane, have come from America, and all of which owe their introduction into the dark and ill-provided continent to a little people that has to put up with a great deal of ingratitude and calumny—the Portuguese.

I cannot now enter into the intricate and fascinating subject of the Congo languages. Many curious points are here to be studied. For fuller information I must refer to my book on the Congo, which is now in the press.¹ At present I will only mention a few of the leading facts concerning the Congo tongues. Between Stanley Pool and the coast there is one great leading tongue spoken, though this has different dialects. This is the Congo language, one known and studied by Europeans, probably before any other Bantu tongue. It bears many signs of Portuguese influence, many words of that language being incorporated to express new concepts introduced by the white man. I might also mention that a few words of Portuguese have even penetrated into the dialects of the Ba-yansi; so great was the influence exercised by Portugal, originally, over the Lower Congo. It is curious to remark that the Ba-yansi call the pine-apple “*binazi*,” a corruption of the Portuguese name *ananas*.

Arriving at Stanley Pool, a great change becomes noticeable in the language. *Ki-téké*, the tongue of the Ba-téké, now replaces Congo, and bears scarcely more resemblance to it than that borne to all other kindred Bantu languages of the western group. *Ki-téké* is spoken on the Congo to within a short distance from *Bólóbó*. *Ki-yansi* is the prevailing language on the river from the mouth of the Wabuma to the Equator. *Ki-buma* is the tongue spoken by the Wabuma, who inhabit the lower course of the Wabuma—Quango River.

The language of these three tribes, the Ba-yansi, Ba-téké, and Wabuma, are Bantu of the purest type. That of the Wabuma, however, has undergone a slight degradation in its prefixes, and has acquired a strange guttural sound, resembling the Arabic *ghain*. The affinities of these tongues lie in many different directions, some with the West Coast, some with the north-west, and many words appear identical with those of Eastern Africa. I have been much interested in looking through the Rev. C. Wilson's sketch of the Luganda tongue, spoken on Lake Victoria Nyanza, to find how closely allied it is in many ways to the Congo tongues. In some words it seems half-way between the

¹ This work, “The River Congo, from its Mouth to *Bólóbó*,” has since been published.

languages of the Eastern and Western Bantu groups. One curious fact is worth mentioning in conclusion—one out of the myriad proofs of the homogeneity of the Bantu languages. The name for the grey parrot in the Victoria Nyanza, its furthest eastern limit of distribution, is, in the Lūganda tongue, *Nkusso*. In the Ki-yansi, Ki-téké, and Ki-buma, in the Congo, and finally in the Nbanda tongue of Angola, it is also *Nkusso*. Angola is the southern extremity of the grey parrot's range, and it is called by precisely the same name as thousands of miles away on the Victoria Nyanza.

Description of Plates XXVIII and XXIX.

PLATE XXVIII.

- Fig. 1. Native chief of the village of Nguvi Mpanda, near the Yellala Falls on the Congo.
 „ 2. A sub-chief of Manyanga, a hill-station overlooking the Congo.

PLATE XXIX.

- „ 3. A Queen of Kimpopo, a station near the north-western end of Stanley Pool on the Congo.
 „ 4. A typical native of the Lower Congo.

The foregoing figures, from sketches made by the author, are reproduced from his work, „*The River Congo, from its Mouth to Bolóbo*,” by the courtesy of the publishers, Messrs. Sampson Low, Marston, Searle, and Rivington.

DISCUSSION.

Mr. FRANCIS GALTON remarked that Mr. Johnston's comparative knowledge of the tribes of South-West Africa must be considered unique, as no other European traveller had visited an equally extended portion of those regions. In addition to his power of keen observation, his artistic gifts and the skill with which he had drawn anthropological portraits had made his work of high value. There was probably no part of Africa more interesting to the anthropologist than that of which they had just heard. It was inhabited by very different races—the Negro, the Bantu, and the Bushman, and there was no paramount chief to fuse them into a nation, and blend their peculiarities. Their tendency to segregate into small communities and to form sub-races was much strengthened by the extraordinary variety of the physical features of the country, which ranged between the widest extremes—absolute sterility on the one side, and dense equatorial vegetation on the other. The present diversity of tribes about the Congo could hardly be expected to continue. The influence of the white man—his imports of rum, guns, and disease—would be sure to affect the different tribes



FIG. 3.



FIG. 4.



in various ways; some would be destroyed, others fused together, and many existing characteristics of long standing would be obliterated. It was therefore important that the present state of the Congo Negroes should be put upon record, and it was fortunate that they had been so well delineated by Mr. Johnston.

Dr. E. B. TYLOR called attention to the striking similarity between Mr. Johnston's account of the effect produced on the proportionate strength of females by their being the hard-workers, and the account given by Mr. im Thurn of the same effect due to the same cause among the Indians of Guiana. He hoped that Mr. Johnston would publish in the most careful detail what he had said as to the motive assigned to the poison-water emetic, as bringing out the devil, this being an important contribution toward the explanation of the poison-ordeal. Mr. Johnston had no doubt distinguished with great care genuine explanations of customs given by the natives from inferences of his own, and answers to leading questions. This applied especially to the reason given for breaking the plates, &c., when sacrificed in the temple, or at the graves of the dead. If the natives said in so many words that objects then broken die and go to the spirit-world, this was a valuable confirmation of a doctrine of barbaric animism held in other regions. Mr. Tylor trusted that Mr. Johnston would be able to put on record specimens of the sacred language, with evidence of its representing an archaic Bantu dialect.

The PRESIDENT, Mr. PARK HARRISON, Mr. WALL, and Mr. H. O. FORBES also took part in the discussion, and the author briefly replied.

ANNUAL GENERAL MEETING.

JANUARY 22ND, 1884.

Professor W. H. FLOWER, LL.D., F.R.S., *President, in the Chair.*

The notice convening the meeting was read by the DIRECTOR.

The Minutes of the last Anniversary Meeting were read and confirmed.

The PRESIDENT then declared the ballot open, and appointed Mr. F. T. HALL and Mr. R. B. HOLT scrutineers.

The DIRECTOR then read the Treasurer's Report for the year 1883, as follows:—

TREASURER'S REPORT.

The subscriptions have come in very well during the year 1883, and were in excess of any other year during the past five years, as may be seen from the following figures:—

				£	s.	d.
1879	..	..	..	473	11	0
1880	..	..	..	458	17	0
1881	..	..	..	421	1	0
1882	..	..	..	449	8	0
1883	..	..	..	484	1	0

Since 1881 our income has steadily increased. In addition to current subscriptions, we have received £51 9s. for arrears due for 1882, and £10 10s. paid in advance for 1884, making in all a total of £546.

The illustration fund is credited with 15s., being the sum contributed by Mr. Spurrell as the expense of the illustration of his paper; and Mr. Flinders Petrie contributed a lithographic plate at a cost of £5. The sale of publications has produced a greater sum than in any of the six preceding years, with the exception of 1880, when a very large number was sold, owing to the reduction in price to members.

The sum received by this source has been, during 1883, £102 16s. 9d., as against £91 17s. 8d. in 1882, and £87 8s. 10d. in 1881. Our dividend arising from the investment in the Metropolitan 3½ per cent. stock of £1,099 12s. 10d. is £37 11s. 4d. The sum total of receipts is £791 17s. 6d. on the debit side. The first payment is for rent, to the Royal Society of Literature, £130.

The cost of printing Nos. 40, 41, 42, and 43, of the *Journal* is £254 5s. 6d., being £8 8s. 2d. more than the cost in 1882, owing to the fact that one *Journal*, No. 42, cost almost as much as two ordinary numbers—no less than £25 9s. being charged for corrections in one paper.

On the other hand, the cost of illustrations has been very much reduced; the total expenditure on the *Journal* during the past year has been £94 2s. 8d. less than it was in 1882. Miscellaneous printing is £39 6s. 4d., which is likewise less by £22 18s. 2d. than the cost in 1882. The total expended upon printing has been £293 11s. 10d.

Lithography amounts to £11 0s. 3d., as compared with £100 19s. 10d. in 1882, thus showing an enormous saving.

Salaries and collector's commission amount to £168 2s. 4d., which is a trifle less than in 1882.

Postages amount to £31 15s. 5d., which is £7 11s. less than in the previous year.

Advertising is £4 9s. 6d., which is £2 16s. 6d. less.

In the Library we purchased books and photographs of considerable interest at the Barnard Davis sale for £13 18s. 6d.

Expenses incurred for repairing and mounting maps during 1883 have been £3 7s. 11d.; office expenses amount to £34 3s., which sum includes a payment of £18 9s. 6d. to the carpenter for erecting bookshelves in 1882, the account for which came in too late to be included in last year's payments; had it not been for this unavoidable expenditure, we should only have spent 11s. 9d. more than in 1882.

House expenses amount to £44 3s., being £1 3s. less than in 1882.

The balance, notwithstanding the care that has been taken in diminishing the expenditure, amounts to only £57 5s. 9d. to carry forward to 1884. Our liabilities are less than those reported last year, being only £160 19s. 2d., against £204 18s. 11d., a difference of £43 18s. 9d. This makes the balance in hand practically the same as last year.

The value of our stock in the library, &c., has increased, and the value of the investment in the Metropolitan 3½ per cent. has slightly depreciated, but that is of small importance. The

ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.

Receipts and Payments for the Year ending 31st December, 1883.

RECEIPTS.		PAYMENTS.	
BALANCES, January 1st, 1883:	£ s. d.	RENT, one year to September, 1883.....	£ s. d.
At Bankers'	102 13 6	PRINTING:	
In Office.....	2 0 11½	Journal, Nos. 40, 41, 42, 43	254 5 6
	104 14 5½	Miscellaneous	39 6 4
			298 11 10
SUBSCRIPTIONS:		LITHOGRAPHY, &c.	11 0 3
Paid to Messrs. Roberts & Co.	82 19 0	SALARIES AND COLLECTOR'S COMMISSION	168 2 4
" Collector	401 2 0	POSTAGES:	
" due 1883	51 9 0	Journal	15 14 10
" in advance	10 10 0	Letters and Post Cards	14 5 2½
	546 0 0	Book Parcels and Circulars	1 15 6½
			31 15 5
ILLUSTRATION FUND	0 15 0	ADVERTISING	4 9 0
		PURCHASE OF BOOKS AND PHOTOGRAPHS FROM	
SALE OF PUBLICATIONS:		THE BARNARD DAVIS COLLECTION	18 18 6
Messrs. Trübner & Co.	91 11 1	REPAIRING AND MOUNTING MAPS	3 7 11
Messrs. Longmans & Co.	1 6 2	OFFICE:	
Office:		Stationery	7 7 9½
Journals.....	7 4 6	Receipt Stamps, &c.	2 2 8
Other Publications	2 15 0	Insurance	1 0 0
	102 16 9	Carpenter	18 9 6
		Carriage of Parcels	2 5 9½
		Miscellaneous.....	2 17 8
			34 3 0

DIVIDENDS:

One year on £1,099 12s. 10d., 3½ per. cent stock

37 11 4

HOUSE:

Mrs. Ayres, gratuity for 1882 15 0 0
 " coals and lights, 5 14 0
 " assistance, &c. 2 9 0
 " refreshments at Evening Meetings..... 21 0 0

44 3 0

BALANCES:

At Bankers' 55 3 8
 In Office..... 2 2 6½

57 5 9½

£791 17 6½

We have examined the above statement of account, and have compared the vouchers with the payments, and find the Balances to be as brought forward, £257 *lis.* 9½d.

(Signed) RICHARD WORSLEY, } *Auditors.*
 J. E. KILLICK, }

1884 January, 1884.

APPROXIMATE STATEMENT OF LIABILITIES AND ASSETS ON JANUARY 1ST, 1884.

LIABILITIES.

Sundry Creditors, namely:—

Printers' account..... £ s. d.
 House expenses 105 0 0
 Rent 23 9 2
 Balance 82 10 0
 3,698 15 1½

£3,854 14 3½

ASSETS.

Balances £ s. d.
 Subscriptions in arrear 57 5 9½
 £1,099 12s. 10d., Metropolitan Consolidated Stock at 105 142 16 0
 Estimated value of Library stock of publications, furniture, &c., 1,154 12 6
 2,500 0 0

£2,854 14 3½

approximate balance in favour of the Institute, were we to realise now, is £3,693 15s. 1½d.

No life compositions were received during the past year, consequently no investment was made. A considerable number of members who were in arrear with their subscriptions, and from whom we found it impossible to obtain payment, have been struck off the list of members. At the last anniversary I hoped that several would pay, but only a few answered to the appeal; the amount now in arrear, of which we may fairly expect to receive two-thirds, is £142 16s.

Our annual income has increased £35 8s. 10d., and our expenditure has diminished to the extent of over £100, as compared with 1882. It is to be hoped that we shall have a considerable increase to our roll of members, in order that we may do more towards the furtherance of the science in which we are all so much interested.

F. G. HILTON PRICE,
Treasurer.

On the motion of Colonel GODWIN-AUSTEN, seconded by Mr. A. L. LEWIS, the Treasurer's Report was adopted.

Mr. F. W. RUDLER, the Director, then read the following Report:—

REPORT OF THE COUNCIL OF THE ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND FOR 1883.

During the past year thirteen ordinary meetings have been held, in addition to the Anniversary Meeting and a special extra meeting held at the Piccadilly Hall, by invitation of Mr. Ribeiro, for the purpose of inspecting the Botocudo Indians, and his collection of South American weapons, and other objects of ethnological interest. In the course of the year, the following twenty-five papers have been communicated to the Institute:—

1. "The Probable Region of Man's Evolution." By W. S. Duncan, Esq.
2. "On the Aboriginal and other Tribes of the Yunnan and the Shan Country." By A. R. Colquhoun, Esq.
3. "The Homological Nature of the Human Skeleton." By Alfred Tylor, Esq., F.G.S., F.Z.S.
4. "Report on the Ethnology of Timor-laut." By H. O. Forbes, Esq. Communicated by the Committee of the British Association, through John Evans, Esq., F.R.S.
5. "On the Classification of Languages." By Dr. Gustav Oppert.

6. "On the Osteology of the Ancient Inhabitants of the Orkney Islands." By J. G. Garson, Esq., M.D.
7. "The Mechanical Methods of the Egyptians." By W. M. Flinders Petrie, Esq.
8. "On some Palæolithic Knapping Tools and Modes of using them." By F. C. J. Spurrell, Esq., F.G.S.
9. "On some Customs of the Aborigines of the River Darling, New South Wales." By Frederick Bonney, Esq.
10. "On the Discovery of some Worked Flints, Cores, and Flakes from Blackheath, near Chilworth, and Bramley, Surrey." By Lieut.-Colonel H. H. Godwin-Austen, F.R.S.
11. "Notes on Stone Circles in Brittany." By Admiral F. S. Tremlett, F.G.S.
12. "The Nature and Origin of Group Marriage." By C. Staniland Wake, Esq.
13. "Notes on Stone Implements from South Africa." By Major H. W. Feilden, F.G.S.
14. "Notes on Relics of the Sign and Gesture Language among the Malagasy." By the Rev. James Sibree.
15. "On Old Scandinavian Civilisation among the Modern Esquimaux." By Edward B. Tylor, Esq., D.C.L., F.R.S.
16. "On some Australian Beliefs." By A. W. Howitt, Esq.
17. "On the Botocudo Indians." By A. H. Keane, Esq.
18. "Notes upon the Aboriginal Races of the North-Western Provinces of South America." By R. B. White, Esq.
19. "On the Relative Length of the First Three Toes of the Human Foot." By J. Park Harrison, Esq., M.A.
20. "On Palæolithic Implements from Leyton and Walthamstow, London." By Worthington G. Smith, Esq., F.L.S.
21. "On some Australian Tribes." By Edward Palmer, Esq.
22. "On the Cranial Characters of the Inhabitants of Timor-laut." By J. G. Garson, Esq., M.D.
23. "On some of the Tribes of Timor." By H. O. Forbes, Esq.
24. "Some Australian Ceremonies of Initiation." By A. W. Howitt, Esq. F.G.S.
25. "On the use of the terms Celt and German." By Dr. R. G. Latham.

Four numbers of the *Journal* have been issued to members during the year, namely, Nos. 42, 43, 44, and 45. These contain 564 pages of letterpress, nine plates, several woodcuts, and a considerable number of tables.

The collection of crania, consisting of 292 specimens and nearly 100 casts, has been catalogued by Mr. G. W. Bloxam. During the year, 18 new members have been elected. The list of members has been carefully revised, and a large number of those whose addresses were not known, or whose subscriptions were several years in arrear, have now been removed from the books; this removal has made the total number of members appear smaller than usual, but the income of the Society has not been affected thereby.

The former and present state of the Institute, with regard to the number of Members, are shown in the following Table:—

	Honorary.	Compounders.	Annual Subscribers.	Total.
January 1st, 1883 ..	49	92	325	466
Since elected .. ..	..	..	+18	+18
Since deceased ..	-1	-2	-4	-7
Since retired .. ..	..	..	-7	-7
Removed from list ..	-3	..	-62	-65
January 1st, 1884 ..	45	90	270	405

It will be seen from this Table that the Institute has really gained during the year seven annual subscribers. The Council regrets to report that the Institute has lost, through death, one Honorary Member, Dr. Nilsson, of Lund; and the following Ordinary Members: Mr. Jacob Boys, Colonel the Hon. T. J. Cholmondeley, Lord Talbot de Malahide, Mr. C. Robert des Ruffières, Mr. W. Spottiswoode, and Dr. A. P. Stewart.

The following is a list of the names of donors to the Library during the past year:—

Professor Agassiz; Professor Paul Albrecht; Dr. Nathan Allen; Edwin A. Barber, Esq.; Baron J. de Baye; J. Wood Beilby, Esq.; Dr. George Bennett; G. Bertin, Esq.; C. H. E. Carmichael, Esq.; Lucien Carr, Esq.; Dr. Victor Chambellan; Robert N. Cust, Esq.; Edward M. Curr, Esq.; Dr. Fligier; Ivan Golovine, Esq.; Andreas Gottschling, Esq.; George Gould, Esq.; Mrs. Guest; Horatio Hale, Esq.; F. T. Hall, Esq.; H. F. Hall, Esq.; M. E. T. Hamy; Professor Jacob Heiberg; Dr. W. J. Hoffman; T. V. Holmes, Esq.; Dr. Emil Holub; G. H. Kinahan, Esq.; Dr. J. Kopernicki; A. L. Lewis, Esq.; D. Macdonald, Esq.; Raphael Meldola, Esq.; Dr. A. B. Meyer; Francisco P. Moreno, Esq.; Rev. F. O. Morris; Dr. Giustiniano Nicolucci; Professor A. F. Pott; F. W. Putnam, Esq.; Professor A. de Quatrefages; Dr. E. Reyer; Lieut.-Gen. Rivers; Professor Schaffhausen; Dr. E. H. M. Sell; Captain R. C. Temple; E. F. im Thurn, Esq.; Professor R. Virchow; C. Staniland Wake, Esq.; A. Winter, Esq.; W. Whitaker, Esq.; The Colonial Office; The Colonial Secretary; The Government of Madras; The Secretary of the Interior, U.S.A.; Sec. de Estado y del Despacho de Fomento, Republica de Guatemala; Messrs. A. Asher & Co.; Academia Cesaria Leopoldino-Carolinae Germanicae Naturae Curiosorum; Academia Nacional de Ciencias en Cordoba; Académie Impériale des Sciences de St. Pétersbourg; Académie Royale des Sciences de Belgique; Akademia

Umiejetnosci w Krakowie; American Association for the Advancement of Science; American Philosophical Society for Promoting Useful Knowledge; Anthropological Society of Washington; Anthropologische Gesellschaft, Wien; Asiatic Society of Bengal; Bataviaasch Genootschap van Kunsten en Wetenschappen; Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte; British Association for the Advancement of Science; Bureau of Ethnology, Washington; Canadian Institute, Toronto; Davenport Academy of Natural Sciences; Deutsche Gesellschaft für Anthropologie, Ethnologie und Urgeschichte; Devonshire Association for the Advancement of Science, Literature, and Art; East India Association; Essex Field Club; Geographical Society of San Francisco; Geographischen Gesellschaft zu Greifswald; Geological Society of Glasgow; Geologists' Association; K. K. Geographische Gesellschaft, Wien; Kaiserliche Akademie der Wissenschaften; Kongelige Danske Videnskabernes Selskab; Kongliga Vitterhets Historie och Antiquitets Akademien; Koninklijke Akademie van Wetenschappen; Leeds Philosophical and Literary Society; Maux Society; Mitchell Library; Museu Nacional do Rio de Janeiro; National Association for the Promotion of Social Science; New Zealand Institute; Oberhessische Gesellschaft für Natur und Heilkunde; Peabody Museum; Philosophical Society of Glasgow; Physikalisch-ökonomische Gesellschaft zu Königsberg; Public Free Libraries, Manchester; R. Accademia dei Lincei; Royal Asiatic Society; Royal Colonial Institute; Royal Dublin Society; Royal Geographical Society; Royal Geological Society of Ireland; Royal Historical and Archaeological Association of Ireland; Royal Institution of Cornwall; Royal Society; Royal Society of South Australia; Royal Society of Victoria; Royal United Service Institution; Smithsonian Institution; Sociedade de Geographia de Lisboa; Società Africana d'Italia; Società di Scienze Naturali ed Economiche di Palermo; Società Geografica Italiana; Società Italiana di Antropologia, Etnologia, e Psicologia Comparata; Società Italiana di Scienze Naturali; Société d'Anthropologie de Lyons; Société de Anthropologie de Paris; Société de Borda, Dax; Société des Sciences Naturelles de Neuchâtel; Société Impériale des Amis d'Histoire Naturelle de Moscou; Société Impériale des Naturalistes de Moscou; Society of Antiquaries; Society of Antiquaries of Scotland; Society of Arts; Society of Biblical Archaeology; State Board of Health, &c., Boston, Mass.; University of Tokio; Verein für Erdkunde, Leipzig; The Editor of the American Antiquarian; The Editor of the Australasian Medical Gazette; The Editor of *Bullettino di Paletnologia Italiana*; The Editor of *Correspondenz-Blatt*; The Editor of the *Journal of Mental Science*; The Editor of *Materiaux pour l'Histoire de l'Homme*; The Editor of *Nature*; The Editor of *Panjab Notes and Queries*; The Editor of *Revue d'Anthropologie*; The Editor of *Revue d'Ethnographie*; The Editor of *Revue Politique et Littéraire*; The Editor of *Revue Scientifique*; The Editor of *Science*; The Editor of the *Scientific Roll*; and The Editor of *Timehri*.

It was moved by Colonel WALTER CAMPBELL, seconded by Captain JOHNSON, and carried unanimously, that the Report of the Council be adopted.

The PRESIDENT then delivered the following address:—

PRESIDENT'S ADDRESS.

On the AIMS and PROSPECTS of the STUDY of ANTHROPOLOGY.

By Professor W. H. FLOWER, LL.D., F.R.S., *President.*

THOSE who are present at this meeting need scarcely be reminded of the importance of the subject which is our common bond of union, that which is defined in the prospectus of the Institute as "the promotion of the science of mankind by the accumulation of observations bearing on man's past history and present state in all parts of the globe."

But those present are a very small fraction indeed of the persons in this country to whom this great subject is, or should be in some one or other of its various divisions, a matter of deep interest, and as it is possible that the words which it is my privilege and duty as your President to address to you on this occasion may be read by some who are not yet so much conversant with the aims of anthropology and the means for its cultivation which this Institute affords as those who have taken the trouble to come here this evening, I hope that you will pardon me if I bring before you some general considerations, perhaps familiar to all of you, regarding the scope and value of the science the advancement of which we have at heart.

One of the great difficulties with regard to making anthropology a special subject of study, and devoting a special organisation to its promotion, is the multifarious nature of the branches of knowledge comprehended under the title. This very ambition, which endeavours to include such an extensive range of knowledge, ramifying in all directions, illustrating and receiving light from so many other sciences, appears often to overleap itself and give a looseness and indefiniteness to

the aims of the individual or the institution proposing to cultivate it.

The old term *ethnology* has a far more limited and definite meaning. It is the study of the different peoples or races who compose the varied population of the world, including their physical characters, their intellectual and moral development, their languages, social customs, opinions, and beliefs, their origin, history, migrations, and present geographical distribution, and their relations to each other. These subjects may be treated of under two aspects—first, by a consideration of the general laws by which the modifications in all these characters are determined and regulated: this is called *general ethnology*; secondly, by the study and description of the races themselves, as distinguished from each other by the special manifestations of these characters in them. To this the term *special ethnology*, or, more often, *ethnography*, is applied.

Ethnology thus treats of the resemblances and differences of the modifications of the human species in their relations to each other; but *anthropology*, as now understood, has a far wider scope. It treats of mankind as a whole. It investigates his origin and his relations to the rest of the universe. It invokes the aid of the sciences of zoology, comparative anatomy, and physiology; and the wider the range of knowledge acquired in other regions of natural structure, and the more abundant the terms of comparison known, the less risk there will be of error in attempting to estimate the distinctions and resemblances between man and his nearest allies, and fixing his place in the zoological scale. Here we are drawn into contact with an immense domain of knowledge, including a study of all the laws which modify the conditions under which organic bodies are manifested, which at first sight seem to have little bearing upon the particular study of man.

Furthermore, it is not only into man's bodily structure and its relations to that of the lower animals that we have to deal; the moral and intellectual side of his nature finds its rudiments in

them also, and the difficult study of comparative psychology, now attracting much attention, is an important factor in any complete system of anthropology.

In endeavouring to investigate the origin of mankind as a whole, geology must lend its assistance to determine the comparative ages of the strata in which the evidences of his existence are found; and researches into his early history soon trench upon totally different branches of knowledge. In tracing the progress of the race from its most primitive condition, the characteristics of its physical structure and relations with the lower animals are soon left behind, and it is upon evidence of a kind peculiar to the human species, and by which man is so pre-eminently distinguished from all other living beings, that our conclusions mainly rest. The study of the works of our earliest known forefathers, "prehistoric archæology," as it is commonly called, although one of the most recently developed branches of knowledge, is now almost a science by itself, and one which is receiving a great amount of attention in all parts of the civilised world. It investigates the origin of all human culture, endeavours to trace to their common beginning the sources of all our arts, customs, and history. The difficulty is what to include and where to stop; as, though the term "prehistoric" may roughly indicate an artificial line between the province of the anthropologist and that which more legitimately belongs to the archæologist, the antiquary, and the historian, it is perfectly evident that the studies of the one pass insensibly into those of the other. Knowledge of the origin and development of particular existing customs throws immense light upon their real nature and importance, and conversely, it is often only from a profound acquaintance with the present or comparatively modern manifestations of culture that we are able to interpret the slight indications afforded us by the scanty remains of primitive civilisation.

Even the more limited subject of ethnology must be approached from many sides, and requires for its cultivation knowledge

derived from sciences so diverse, and requiring such different mental attributes and systems of training, as scarcely ever to be found combined in one individual. This will become perfectly evident when we consider the various factors or elements which constitute the differential characters of the groups or races into which mankind is divided. The most important of these are:—

1. Structural or anatomical characters, derived from diversities of stature, proportions of different parts of the body, complexion, features, colour and character of the hair, form of the skull and other bones, and the hitherto little studied anatomy of the nervous, muscular, vascular, and other systems. The modifications in these structures in the different varieties of man are so slight and subtle, and so variously combined, that their due appreciation, and the discrimination of what in them is essential or important, and what incidental or merely superficial, requires a long and careful training, superadded to a preliminary knowledge of the general anatomy of man and the higher animals. The study of physical or zoological ethnology, though it lies at the basis of that of race, is thus necessarily limited to a comparatively few original investigators.

2. The mental and moral characters by which different races are distinguished are still more difficult to fathom and to describe and define, and although the subject of much vague statement, as there are few people who do not consider themselves competent to give an opinion about them, they have hitherto been rarely approached by any strictly scientific method of inquiry.

3. *Language*.—The same difficulties are met with in the study of language as in that of physical peculiarities, in the discrimination between the fundamental and essential, and the mere accidental and superficial resemblances, and in proportion as these difficulties are successfully overcome will the results of the study become valuable instead of misleading. Though the science of language is an essential part of ethnology, and one which generally absorbs almost the entire energies of any one who cultivates it, its place in discriminating racial affinities is

unquestionably below that of physical characters. Used, however, with due caution, it is a powerful aid to our investigations, and in the difficulties with which the subject is surrounded, one which we can by no means afford to do without.

4. The same may be said of social customs, including habitations, dress, arms, food, as well as ceremonies, beliefs, and laws, in themselves fascinating subjects of study, placed here in the fourth rank, not as possessing any want of interest, but as contributing comparatively little to our knowledge of the natural classification and affinities of the racial divisions of man. When we see identical and most strange customs, such as particular modes of mutilation of the body, showing themselves among races the most diverse in character and remote geographically, we cannot help coming to the conclusion that these customs have either been communicated in some hitherto unexplained manner, or are the outcome of some common element of humanity, in either of which cases they tell nothing of the special relations or affinities of the races which practise them.

This subject of ethnography, or the discrimination and description of race characteristics, is perhaps the most practically important of the various branches of anthropology. Its importance to those who have to rule—and there are few of us now who are not called upon to bear our share of the responsibility of government—can scarcely be over-estimated in an empire like this, the population of which is composed of examples of almost every diversity under which the human body and mind can manifest itself. The physical characteristics of race, so strongly marked in many cases, are probably always associated with equally or more diverse characteristics of temper and intellect. In fact, even when the physical divergences are weakly shown, as in the case of the different races which contribute to make up the home portion of the empire, the mental and moral characteristics are still most strongly marked. As it behoves the wise physician not only to study the particular kind of disease under which his patient is

suffering, and then to administer the approved remedies for such disease, but also to take into careful account the peculiar idiosyncrasy and inherited tendencies of the individual, which so greatly modify both the course of the disease and the action of remedies, so it is absolutely necessary for the statesman who would govern successfully, not to look upon human nature in the abstract and endeavour to apply universal rules, but to consider the special moral, intellectual, and social capabilities, wants, and aspirations of each particular race with which he has to deal. A form of government under which one race would live happily and prosperously would to another be the cause of unendurable misery. The remedies which may be advisable to mitigate the difficulties and disadvantages under which the English artisan classes may suffer in their struggle through life, would be absolutely inapplicable, for instance, to the case of the Egyptian fellaheen. It is not only that their education, training, and circumstances are dissimilar, but that their very mental constitution is totally distinct. And when we have to do with people still more widely removed from ourselves, African Negroes, American Indians, Australian or Pacific Islanders, it seems almost impossible to find any common ground of union or *modus vivendi*; the mere contact of the races generally ends in the extermination of one of them. If such disastrous consequences cannot be altogether averted, we have it still in our power to do much to mitigate their evils.

All these questions, then, should be carefully studied by those who have any share in the government of people belonging to races alien to themselves. A knowledge of their special characters and relations to one another has a more practical object than the mere satisfaction of scientific curiosity; it is a knowledge upon which the happiness and prosperity, or the reverse, of millions of our fellow-creatures may depend.

It is gratifying to find, then, that there are in our own country—for on this occasion I will not speak of what is being done elsewhere—many signs that the prospects of a thorough and

scientific cultivation of anthropology in its several branches are brightening.

I may first mention the publication of the final Report of the Anthropometric Committee of the British Association for the Advancement of Science, of which formerly the late Dr. W. Farr, and recently our Vice-President, Mr. Francis Galton, have been Chairmen, and in which Mr. Charles Roberts, Dr. Beddoe, Sir Rawson Rawson, and some other of our members, have taken so active a part. This Report, and those which have from time to time been issued by the Committee during the progress of the work, contain a large mass of valuable statistical information relating to the physical characters, including stature, weight, chest girth, colour of eyes and hair, strength of arm, &c., of the inhabitants of the British Isles, illustrated by maps and diagrams. Excellent as has been the work of the Committee, there is still much to be done in the same direction, and larger numbers of observations even than those already obtained are in many cases necessary to verify or correct the inferences drawn from them. This is thoroughly acknowledged in the Report, which states in one of the concluding paragraphs that "the Committee believes that it has laid a substantial foundation for a further and more exhaustive study of the physical condition of a people by anthropometric methods, and that its action will prove that it has been useful as an example to other scientific societies and to individuals in stimulating them, as well as directing them in the methods of making statistical inquiries relative to social questions."

It is satisfactory to learn that many portions of the work thus inaugurated will be carried on by bodies specially interested in particular departments, as the Collective Investigation Committee of the British Medical Association, and the Committee of the British Association for collecting photographs and defining the characteristics of the principal races of the United Kingdom, a subject in which Mr. Park Harrison is taking so deep an interest.

It should be mentioned that the original returns upon which

the reports of the Committee are based, including much information which has not yet been analysed and tabulated, on account of the time and labour such a process would involve, as well as the instruments of investigation purchased with funds supplied by the British Association, have been, by the consent of the Council of the Association, placed under the charge of the officers of this Institute.

It is very satisfactory, in the next place, to be able to record that our great centres of intellectual culture are gradually waking up from that state of apathy with which they have hitherto regarded the subject of anthropology.

In Oxford the impulse given by the genius and energy of Rolleston has begun to bear fruit. The University has taken charge of the grand collection of ethnological objects most liberally offered to it by our former President, General Pitt Rivers, and has undertaken not only to provide a suitable building for its reception, but also to maintain it in a manner worthy of the scientific discernment and munificence displayed by the donor in collecting and arranging it. Furthermore, Oxford has shown her wisdom in affiliating to herself the most learned of English anthropologists in the widest sense of the word, one of the few men in this country who has made the subject the principal occupation of his life. I need scarcely say that I refer to another of our former Presidents, Dr. E. B. Tylor. By conferring a Readership in Anthropology upon him Oxford has instituted the first systematic teaching of the subject yet given in any educational establishment in this country, and it is a great credit to the oldest University that it should thus lead the way in one of the most modern of sciences. It is, however, only a beginning; the whole of the great subject is confined to the teaching of one individual with modest stipend and not admitted to the dignity of the Professoriate. In the '*École des Hautes Études*' at Paris anthropology is taught theoretically and practically in six different branches, each under the direction of a Professor who has specially devoted himself to it, aided, in some cases, by several assistants.

In Cambridge also there are many hopeful signs. The recently-appointed Professor of Anatomy, Dr. Macalister, is known to have paid much attention to anatomical anthropology, and has already intimated that he proposes to give instruction in it during the summer term. An Ethnological and Archæological Museum is also in progress of formation, which, if not destined to rival that of Oxford, already contains many objects of great value, and a guarantee of its good preservation and arrangement may be looked for in the recent appointment of Baron Anatole von Hügel as its first Curator.

Perhaps in no place in the world could so varied and complete an anthropological collection be expected as in the National Museum of this country, which should be the great repository of the scientific gleanings of the numerous naval, military, exploring, and mercantile expeditions sent out by the Government or by private enterprise for more than a century past, and penetrating into almost every region of the globe. Our insular position, maritime supremacy, numerous dependencies, and ramifying commerce, have given us unusually favourable opportunities for the formation of such collections—opportunities which, unfortunately, in past times have not been used so fully as might be desired. There is, however, a great change coming over those who have charge of our national collections in regard to this subject. Thanks to the foresight and munificence of the late Mr. Henry Christy, and the well-directed energies of Mr. Franks and his colleagues, the collection illustrating the customs, clothing, arts, and arms of the various existing and extinct races of men, in the British Museum, is rapidly assuming an importance which will be a surprise to those who see it for the first time arranged in the large galleries formerly devoted to mammals and birds. Even the grand proportion of space allotted to this collection in the re-arrangement of the Museum is, I am told, scarcely sufficient for its present needs, to say nothing of the accessions which it will doubtless receive now that its importance and good order are manifest.

A national collection of illustrations of the physical characters of the races of men, fully illustrated by skeletons, by anatomical specimens preserved in spirit, by casts, models, drawings, and photographs such as that which exists in the "Muséum d'Histoire Naturelle" at Paris, is still a desideratum in this country. The British Museum till lately ignored the subject altogether, and in the beginning of the century actually expelled such specimens of the kind as had accidentally found their way within its walls. Recently, however, skulls and skeletons of man have been admitted, and since the removal of the zoological collections to the new building at South Kensington their importance as an integral part of the series has been recognised, and their exhibition in the osteological gallery will doubtless stimulate the growth of what we may trust will be ultimately a collection worthy of the nation—although, unfortunately, from causes too well known, the difficulties of procuring pure examples of many races are gradually increasing, and in some cases have become well-nigh insuperable. The Museum contains at present 407 specimens illustrating human osteology, of which 10 are skeletons more or less complete.

In the meantime the College of Surgeons of England has done much to supply the deficiency. During the last twenty years it has let few opportunities pass of attracting to itself, and therefore saving from the destruction or lapse into the neglected, valueless condition into which small private collections almost invariably ultimately fall, a large number of specimens, now, it is to be hoped, placed permanently within the reach of scientific observation. The growth of this collection may be illustrated by the fact that, whereas at the time of the publication of the Catalogue in 1853 it consisted of 18 skeletons and 242 crania, it now contains 89 more or less complete skeletons and 1380 crania, nearly all of which have been added during the last twenty years. This is, moreover, irrespective of the great collection of Dr. Barnard Davis, purchased in 1880 by the College, which was thus the means of preserving intact, for the future

advantage and instruction of British anthropologists, an invaluable series of specimens otherwise probably destined to have been dispersed or lost to the country for ever. This collection consists of 24 skeletons and 1,539 crania, making, with the remainder of the College collection, a total of 3,032 specimens illustrating the osteological modifications of the human species. These are all in excellent order, clean, accessible, and catalogued in a manner convenient for reference, although somewhat too crowded in their present locality to be readily available for observation.

Large as is this collection, and rich in rare and interesting types, it is far from exhaustive; many great groups are almost or entirely unrepresented even by crania, and the series of skeletons is (with the exception of one race only, the Andamanese) quite insufficient to give any correct idea of the average proportions of the different parts of the framework. In fact, such a collection as would be required for this purpose must be quite beyond the resources of, as well as out of place in, any but a national museum.

The collections illustrating anatomical anthropology in the University museums of Oxford, Cambridge, Edinburgh, and Dublin have all greatly increased of late, but for the reasons just given they can never be expected to attain the dimensions required for the study of the subject in its profoundest details. The small, but very choice collections formed by the officers of the Medical Department of the army, and kept in the museum of the Royal Victoria Hospital at Netley, and that of the navy at Haslar Hospital, are, I believe, in a stationary condition, but in good preservation. Our own collection, which also contains some valuable specimens (notably the complete skeleton of one of the extinct Tasmanian aborigines, presented by the late Mr. Morton Allport), and which during the past year has been catalogued for the first time by Mr. Bloxam, has not been added to, owing to a feeling which the Council has long entertained, and which induced them to part with the ethnological collection,

that a museum, entailing as it does, if worthily kept up, a very considerable annual expense, is not within the means of the Institute—at all events not until the more pressing claims of the library and the publications are fully satisfied.

This leads me to speak, in conclusion, of the work accomplished during the past year by the Institute, and of its present position and future prospects.

I must first refer to that portion of the retrospect of the year which always casts a certain sadness over these occasions—the losses we have sustained by death. Happily these have not been numerous, and do not include, as has been the case in many former years, any from whom great work in our own subject might still have been expected. Though we were all proud to number William Spottiswoode, the President of the Royal Society, among our members, and though we all honoured him for his accomplishments in other branches of science, and loved him for his worth as a man who rose high above his fellows in his chivalrous sense of honour and simple dignity of demeanour, we could not claim him as a worker at anthropology.

Lord Talbot de Malahide's antiquarian pursuits frequently verged upon our own subjects in their proper sense, and he was often present at our meetings, and a very recent contributor to our Journal. He had, however, reached the ripe old age of eighty-two.

From the list of our honorary members we have lost a still more venerable name, that of Sven Nilsson, Professor in the Academy of Lund. He was born on March 8th, 1787, and died on November 30th of last year, and was therefore well on in his ninety-seventh year. His long-continued and laborious researches in the zoology, palæontology, anthropology, and antiquities of his native land gave him a high place among men of science. Among a host of minor contributions he was the author of a standard work on the Scandinavian fauna; but that by which he was best known to us is the book of which the English translation, edited by Sir John Lubbock, bears the title of "*The*

Primitive Inhabitants of Scandinavia : an Essay on Comparative Ethnography, and a Contribution to the History of the Development of Mankind."

The number of our ordinary members has been fairly kept up, the additions by election having slightly exceeded the losses by death and resignation ; but a larger increase in the future will be necessary in order to carry on the operations of the Institute in a successful manner, especially under the new conditions to which I shall have to advert presently. Even by the most careful management our Treasurer has not succeeded in bringing the expenditure of the year quite within our ordinary income.

The Journal, I am glad to report, has been brought out with exemplary punctuality, under the able and energetic supervision of our director, Mr. Rudler. To this part of our operations I think we may look with unmixed satisfaction, the number, character, and variety of the communications contained in it being quite equal to those of former years.

With regard to our future, the next year will probably be one of the most momentous in our annals, as we have determined upon a great step, no less than a change of domicile. It was ascertained in the course of last summer that we could only remain in our present quarters at an increased rent upon that which we had hitherto paid, and upon a very uncertain tenure. We therefore considered whether it would be possible to obtain as good or better accommodation elsewhere. It happened fortunately that the Zoological Society was about to move into new freehold premises at No. 3, Hanover Square, and would have spare rooms available for the occupation of other societies. A committee of the Council was appointed to examine and report upon the desirability of moving, and negotiations were entered into with the Council of the Zoological Society which have ended in our becoming their tenants for the future. We shall have for the purposes of our library, office, and Council meetings, two convenient rooms on the second floor immediately above the library of the Zoological Society, and for the purpose of storing

our stock of publications a small room on the basement. We shall also have the use of a far more handsome and commodious meeting-room than that which we occupy at the present moment, and in a situation which is in many respects more advantageous. Let us trust that this change may be the inauguration of an era of prosperity to the Institute, and of increased scientific activity among its members.

It was moved by Mr. HYDE CLARKE, seconded by Prof. THANE, and carried unanimously, that the thanks of the meeting be given to the President for his address, and that he permit it to be printed in the *Journal* of the Institute.

The Scrutineers gave in their report, and the following gentlemen were declared to be duly elected to serve as Officers and Council for the year 1884:—

President.—Prof. W. H. Flower, LL.D., F.R.S.

Vice-Presidents.—Hyde Clarke, Esq.; John Evans, Esq., D.C.L., F.R.S.; Francis Galton, Esq., M.A., F.R.S.; Lieut.-Col. H. H. Godwin-Austen, F.R.S.; Lieut.-General Pitt Rivers, F.R.S., E. B. Tylor, Esq., D.C.L., F.R.S.

Director.—F. W. Rudler, Esq., F.G.S.

Treasurer.—F. G. H. Price, Esq., F.S.A.

Council.—J. Beddoe, Esq., M.D., F.R.S.; S. E. B. Bouverie-Pusey, Esq.; E. W. Brabrook, Esq., F.S.A.; C. H. E. Carmichael, Esq., M.A.; W. L. Distant, Esq.; C. I. Elton, Esq., B.A.; A. W. Franks, Esq., M.A., F.R.S.; J. G. Garson, Esq., M.D.; Prof. Huxley, F.R.S.; Prof. A. H. Keane, B.A.; A. L. Lewis, Esq.; Sir J. Lubbock, Bart., M.P.; R. Biddulph Martin, Esq., M.P.; Henry Muirhead, Esq., M.D.; J. E. Price, Esq., F.S.A.; Lord Arthur Russell, M.P.; Prof. G. D. Thane; A. Thomson, Esq., M.D., F.R.S.; Alfred Tylor, Esq., F.G.S.; and M. J. Walhouse, Esq., F.R.S.

Mr. JAMES HEYWOOD moved, and Mr. PARK HARRISON seconded, a vote of thanks to the retiring members of the Council, which was carried unanimously.

A vote of thanks to Mr. RUDLER for his services as Director and Editor of the *Journal* was moved by Dr. GARSON, seconded by Mr. A. L. LEWIS, and carried unanimously.

ANTHROPOLOGICAL MISCELLANEA.

AN EXAMINATION of some OFFICIAL STATISTICS relating to the POPULATION of FINLAND. By A. L. LEWIS, F.C.A., M.A.I.

A SHORT time ago I became possessed of a small work entitled "*Renseignements sur la Population de Finlande*," by C. E. F. Ignatius, Chief of the Statistical Bureau, and published at Helsingfors in 1869 at the expense of the Government. This little work, which I have now the pleasure of presenting to our library, is very well got up, and contains nine nicely executed maps of the country, coloured to illustrate the tables of statistics.

The Grand Duchy of Finland was united to the Russian Empire in 1809, but continued to enjoy its own government, constitution, and laws; it is about two-thirds the size of France, and the climate, though naturally much more severe than our own, is said to be, like that of Scandinavia, milder than that of Siberia, Labrador, Greenland, and other parts of the world in the same latitude. Although the registered population in 1865 was only 1,843,253, it was of considerable interest from an anthropological point of view, as it included Finns (so called), Lapps, Swedes, and Russians, besides more than 40,000 Greeks.

The country is divided into 50 *arrondissements*, of which the most northerly one is inhabited by Lapps, who in 1865 were 6,415 in number—less than one to a square kilomètre. The statistics show a lower average of crimes, deaths, marriages, and births amongst the Lapps than amongst the other populations as a whole, which may partly be accounted for by the difficulty of registration amongst such a people in such a country. The illegitimate births registered there are low—3 to 5 in every hundred.

The *arrondissement* of *Euröpää*, no part of which is more than thirty miles from St. Petersburg, is set down as exclusively Russian; its population in 1865 was 32,694. The crimes registered in this department were rather low; the births, deaths, and marriages at a medium rate; and the growth of population from 1840 to 1865 decidedly low, as compared to those in other *arrondissements*. As the density of the population was at the highest rural rate, namely, between 10 and 20 to the square kilomètre, it may be supposed that the slower growth of the population is due to the fact of its having been more fully populated before 1840 than other *arrondissements*. The illegitimate births were low—3 to 5 in every hundred.

The Swedes (and I suppose the Greeks, though they are not

distinguished) were distributed in 14 arrondissements bordering on the sea, and one (the Isles of Åland) surrounded by it. Of these 15 the last named is said to have contained more than 90 per cent. of Swedes. Its population was comparatively thick, marriages high, births and deaths and growth of population medium, illegitimate births 5 to 8 in every hundred, but crimes at the lowest rate, perhaps from a possible difficulty in escaping detection and apprehension. In the other 14 mixed arrondissements Swedes were found in varying proportions from 2 to 90 per cent. of the population. Helsingfors and Åbo, the two largest places in the country, with populations exceeding (in 1865) 25,000 and 18,000 respectively, are situated in two of these arrondissements, and in them crimes, marriages, and illegitimate births attained their highest proportions; this is only what might be expected, but the average of crime is probably unduly swelled, as the births, deaths, and marriages appear to have depended mainly on lists compiled by the clergy, whose attention is evaded by many inhabitants of the towns, while the records of crime must have been obtained from other and more all-embracing sources.

Finally we have 33 arrondissements which are said to have been practically all Finnish, and here I may say M. Ignatius points out that these people call themselves *Suomalaiset*,¹ and do not appear to have got into Finland from their habitations on the middle Wolga till the eighth century of our era—600 years after Tacitus introduced the name *Fenni*; they are generally classed as "Turanians," but I have no statistics as to their physical characteristics.² In these 33 arrondissements the density of the population varied from less than 1 to 11·20 inhabitants in the square kilometre, and its rate of growth, marriage, death, fecundity, crime, and illegitimacy were no less various.

In a country so large the conditions of life must be very varied, and it is no doubt greatly owing to this that, although I have diligently scrutinised these statistics, I have not been able to deduce any general conclusions from them, except that the illegitimate birth rate of the Lapps and Russians is said to have been from 3 to 5 per cent. only, and that of the almost entirely Swedish population of the Isles of Åland from 5 to 8 per cent., while that of the Swedish and Finnish arrondissements varied from below 3 to over 10 per cent., the latter figure being attained not only in Helsingfors and Åbo, which gave 21 and 14 per cent. respectively, but in rural arrondissements, where the Finns perhaps contribute the highest number, although, on the other hand, in the arrondissement containing Wiborg, the third largest place in the country (population over 8,000), and considered as purely Finnish, the rate was only from 3 to 5 per cent., and its purity is commented on by

¹ Mr. Howorth says that this means "Marshmen." (See "Westerly Driftings, &c., Part 2, Fins."—*Journ. Anthropol. Inst.*, vol. ii, p. 205.)

² Mr. Howorth quotes Mr. De Capel Brooke as describing the Finns as tall and fair.

M. Ignatius. The percentage of illegitimate births varied then in 1861-5 from under 3 to over 21 per cent. in different localities, but the general average of the whole of Finland was nearly 7 out of every hundred. In England the rate of illegitimacy has declined from 7 per cent. in 1845 to between 6 and $6\frac{1}{2}$ in 1863-5, and 5.2 in 1873, varying in the latter year from 4 per cent. in London, Surrey, and Middlesex, to 11 per cent. in Cumberland. In Scotland the rate is higher than in England, and in Wurtemberg and Bavaria higher still.

The general birth rate in Finland in 1861-5 was 3.73 per cent. of the inhabitants, while that of England varied in 1868 from 3.19 in Devon to 4.29 in Durham, so that there was no great difference between the two countries in that respect.

The best kept registers of deaths in Finland seem to have been those of some Lutheran congregations, but they disclose a very inferior duration of life to that prevailing in this country as given by our colleague, Mr. Cornelius Walford, in his excellent "Insurance Guide and Handbook." Thus out of every hundred persons born in 1860, 1861, 1862—

In Finland		In England	
25	..	15	died in their 1st year.
15	..	8	died in their 2nd and 3rd years.
$6\frac{1}{2}$	..	3	" " 4th and 5th "
6	..	4	" " 6th to 10th "
$6\frac{1}{2}$	..	7	" " 11th to 25th "
13	..	16	" " 26th to 50th "
28	..	47	" " 51st and upwards.
100		100	

The Finnish statistics do not divide the deaths into periods after 50, a fact which speaks for itself.

From 1865 to 1869 great hardships were endured by the people of Finland, and the birth rate decreased, while the death rate, which in 1860, 1861, and 1862 was, as I have shown, very high, increased to one in every thirteen people, and more than three deaths for every birth; but the years 1860, 1861, and 1862 may, I think, be taken as not showing any unusual mortality.

In conclusion, I may perhaps be allowed to point out that the fact that these statistics are about twenty years old makes them more valuable, as we all know that populations everywhere become more mixed and lose their distinguishing characteristics more and more quickly every year.

DR. FINSCH'S COLLECTION of CASTS.

DR. OTTO FINSCH has prepared a large collection of plaster casts, taken from living individuals, illustrating the physiognomy of the various peoples whom he studied during his travels in the South Sea Islands between 1879 and 1882. These casts may be obtained on terms to be had on application to Dr. Finsch, in Bremen.

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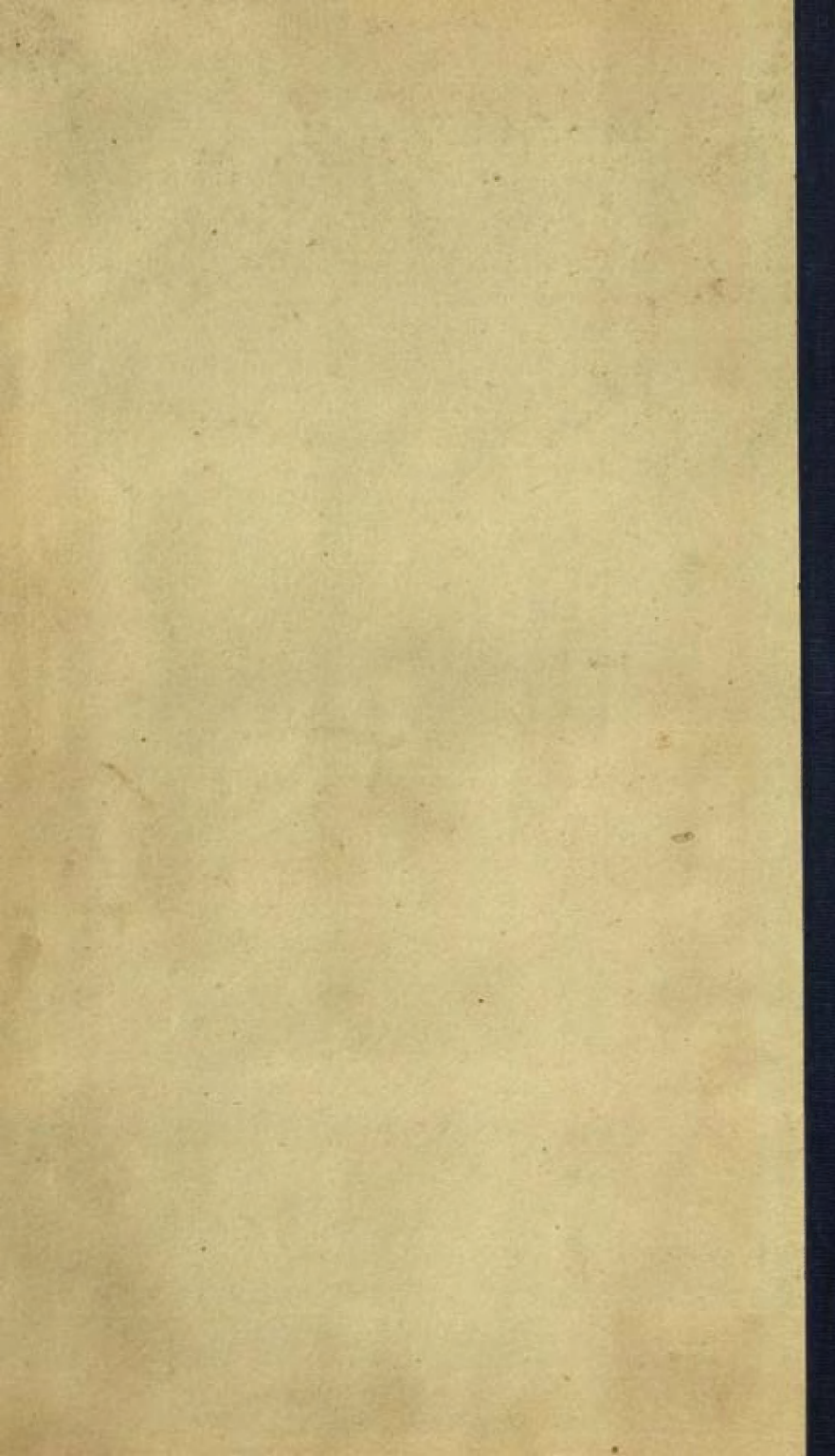
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